



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

HP Docket No.: 10960787- 12 Patent Application
Inventor(s): C. Venkatraman, et al. Group Art: 2142
Serial No.: 09/865,944 Examiner: HARRELL, Robert B.
Filed: May 24, 2001
Title: A System for Providing a Web Page for a Device (as amended)

DECLARATION OF CHANDRASEKAR VENKATRAMAN
UNDER 37 C.F.R. § 1.31

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Chandrasekar Venkatraman, hereby declare that:

1. I am making this declaration under 37 C.F.R. §1.131 in connection with above identified patent application.
2. I am a co-inventor of the above identified application. The other inventor is Jeffrey A. Morgan. Upon information and belief, Hewlett Packard Development Company is the assignee of record of the above identified patent application.
3. I am a citizen of India, and resided in Fremont, California 94539 at the time of filing the application and currently reside in Saratoga, California 95070.
4. I am currently employed by Hewlett Packard Company of Palo Alto, California, and also worked for Hewlett Packard previously from 1989 to 1999.
5. I have reviewed U.S. Patent No. 6,209,048, Wolff ("Wolff"). The Wolff patent was issued on March 27, 2001 and has a filing date of February 9, 1996.

6. I had no knowledge of the Wolff patent until in-house patent attorney, Eileen Lehmann, sent it to me in an e-mail of November 29, 2005, a partially masked copy of which is attached hereto as Exhibit 1.
7. I have reviewed U.S. Patent No. 5,801,689, Huntsman ("Huntsman"), which was issued on September 1, 1998 and has a filing date of January 22, 1996.
8. I had no knowledge of the Huntsman patent until in-house patent attorney, Eileen Lehmann, sent it to me in an e-mail of November 29, 2005, a copy of which is attached hereto as Exhibit 2.
9. The invention disclosed and claimed in the above-identified patent application was conceived and reduced to practice in the United States of America prior to the earlier filing date of January 22, 1996 of the Huntsman patent.
10. Prior to January 22, 1996, my co-inventor and I created a prototype containing the present invention. We enabled a HP LaserJet 4 printer to include a web server that generates a printer web page (See discussion of Exhibit 3 below) and a network interface coupled to the web server. A web browser executing on a personal computer (PC) was able to communicate with the web server via a network connection of the PC to the network interface. Through a communication bus in the printer the web server was coupled to printer control software operating on a microprocessor of the printer for controlling device specific functions of the printer and monitoring information pertinent to the printer.
11. HP sold a product called the HP JetDirect which came in a card version. As illustrated in the "HP JetDirect Connectivity Guide, Printed in USA May, 1995, attached herewith as Exhibit 4, the JetDirect card provided an internal print server for a number of HP printers (see p. 3). The HP JetDirect card provided us a

network connection and access to internals of the printer.


Furthermore, we could add (and modify) the internal firmware in these cards. As illustrated on page 3, the JetDirect card was inserted inside a printer as illustrated via a card slot.

12. The HP JetDirect print server supported a variety of protocols some examples of which were a Simple Network Management Protocol (SNMP) agent resident on the printer server which allowed management of the network printer using the TCP/IP, IPX, DLC, or AppleTalk protocols. (See Exhibit 5 (Software Installation Guide, HP JetDirect Print Server, September, 1996. Although the descriptive document was printed in 1996, at least the TCP/IP and IPX protocols were on the 1995 HP JetDirect print server cards.)
13. The HP JetDirect printer server had a network address associated with it which could also be modified. As illustrated in Exhibit 3, a network address represented by the name "portdv9" was assigned to the Jet Direct print server in the prototype.
14. The HP JetDirect print server in 1995 was accessible using the Telnet protocol based on TCP/IP. The Telnet protocol uses the IANA designated port number of 23. We modified the configuration of the telnet server so that it listened for network requests on port 80. Port 80 is the IANA designated port number for HTTP access. We developed and downloaded a script onto the JetDirect print server to accept and process the web based protocol HTTP requests via the modified Telnet server, thus turning the HP JetDirect print server into a web server.
15. A printer web page very similar to that illustrated in Exhibit 3 was generated using HTML and downloaded as well into memory on the JetDirect print server card onto the printer using the web HTTP protocol. Prior to January 22, 1996, the network address of <http://portdv9/> was requested from a Netscape browser

running on a personal computer networked into HP Labs intranet. Prior to January 22, 1996, the browser retrieved and displayed the downloaded printer web page from the print server of the HP JetDirect print server card inside the LaserJet printer. On clicking the "Supplies Ordering" link, the browser was redirected to the HP corporate website which included information on how to order supplies for HP and details of the cartridges supported.

16. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under 18U.S.C. § 1001, and that such willful false statements may jeopardize the validity of the above identified patent application or any patent issued thereon.

Executed on: December 20, 2005, at Bangalore, India

By:  Chandrasekar Venkatraman
Chandrasekar Venkatraman

Lehmann, Eileen

From: Lehmann, Eileen
Sent: Tuesday, November 29, 2005 2:16 PM
To: Morgan, Jeffrey A; Venkatraman, Chandrasekar
Subject: case=10960787 subcase=7

Attachments: US6209048.pdf



US6209048.pdf
(849 KB)

REDACTED

EXHIBIT 1

Lehmann, Eileen

From: Lehmann, Eileen
Sent: Tuesday, November 29, 2005 2:16 PM
To: Morgan, Jeffrey A; Venkatraman, Chandrasekar
Subject: case=10960787 subcase=7

Attachments: US5801689.pdf



US5801689.pdf
(957 KB)

REDACTED

EXHIBIT 2

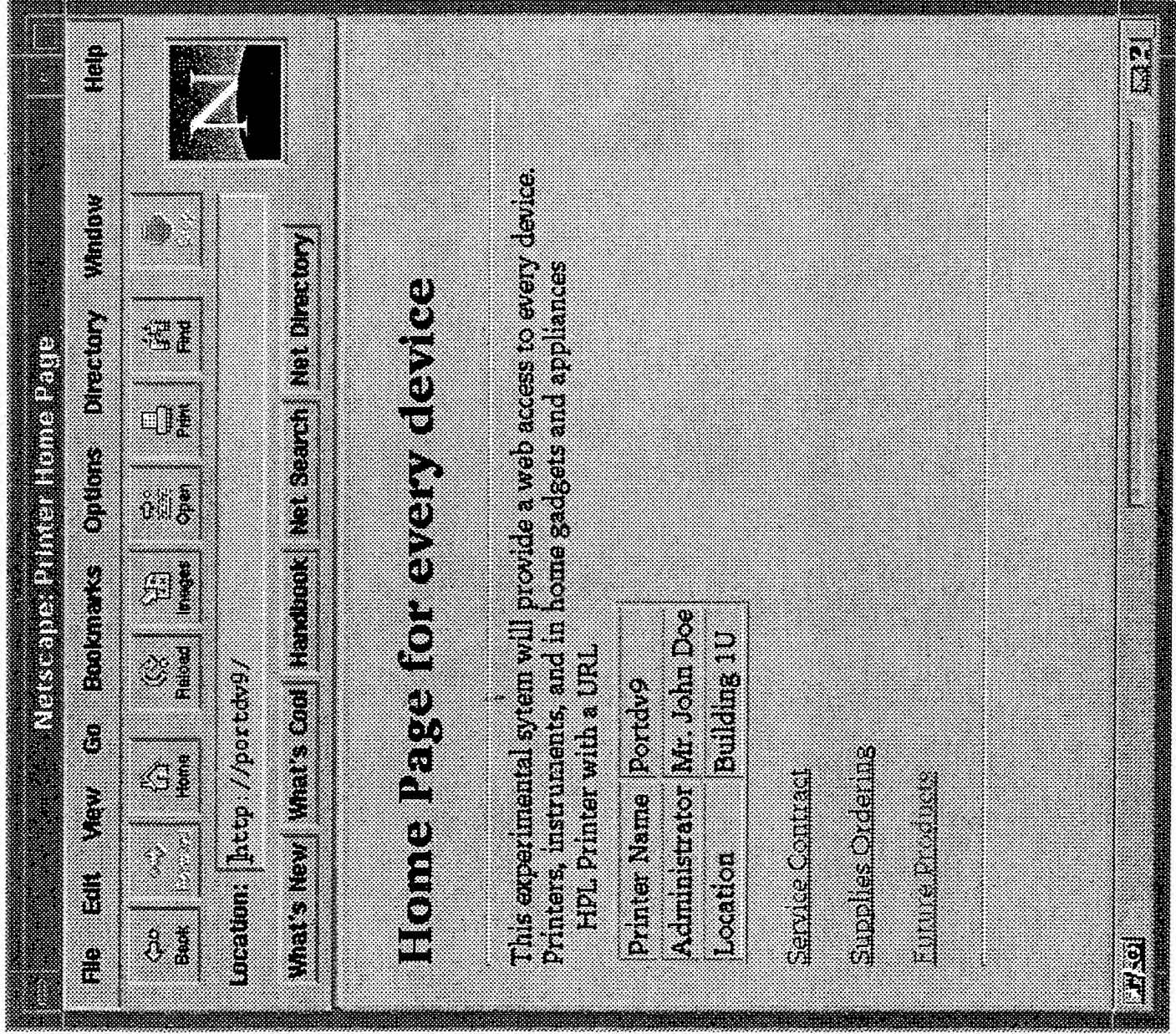
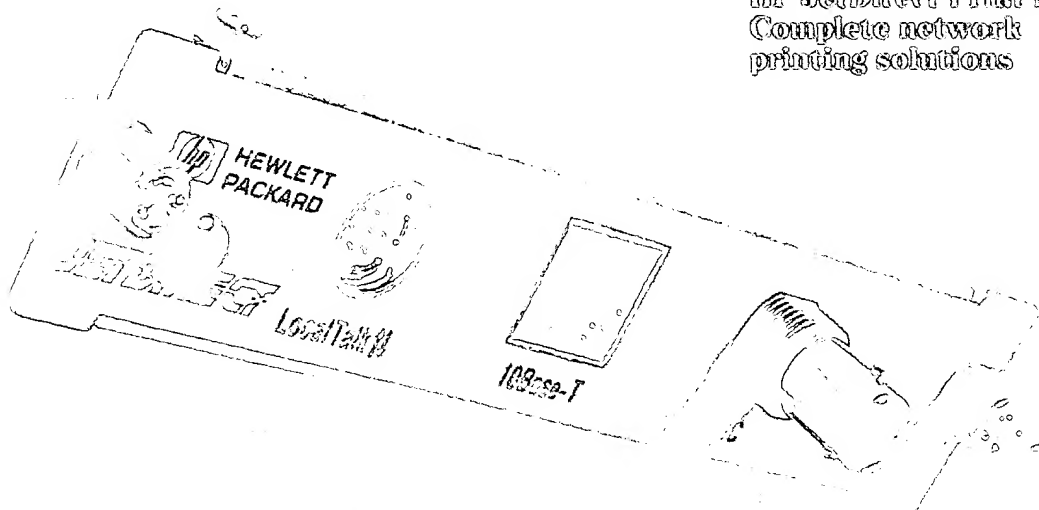


Exhibit 3

Sample of a prototype homepage for a HP Printer

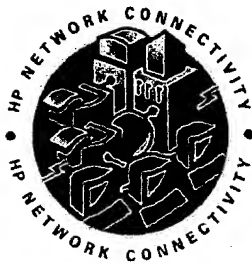
HP JetDirect Connectivity Guide

HP JetDirect Print Servers:
Complete network
printing solutions



Over
1.5 Million
Print Servers
Sold

A solution for every printer in your network environment.



Whether you work in a PC-based LAN, Macintosh or UNIX network environment, the true multi-protocol solution for connecting any printer directly to your LAN is HP JetDirect Print Servers.

In fact, the HP JetDirect line of internal cards is part of a complete network printing solution. Simply install the appropriate HP JetDirect card into the printer's built-in expansion slot, and you're ready to print from anywhere on the LAN.

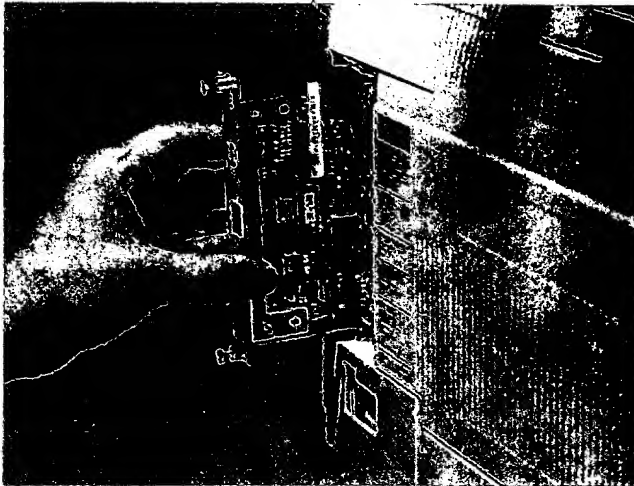
Hewlett-Packard also offers an external single- or multi-port solution that's ideal for shared printing in mixed LAN environments. Turn *any* parallel printer (including dot matrix, ink jet, laser and color printers) into a fully functional network printer by connecting an HP JetDirect EX or HP JetDirect EX Plus3 Print Server to the parallel port.

Even managing your shared printing is simple. That's because every HP JetDirect Print Server is supported by powerful HP JetAdmin printer management software for Novell® NetWare®, Microsoft® Windows 95, IBM LAN Server and UNIX.

FEATURES	JetDirect Card	JetDirect EX	JetDirect EX Plus3
Printer support	HP with I/O slot	Any parallel printer	Any 3 parallel printers
HP JetAdmin printer management software	Yes	Yes	Yes
Internal/External	Internal	External	External
Number of simultaneous printers	1	1	3
True multi-protocol support [†]	Yes	Yes	Yes
Flash memory upgradable [‡]	Yes	Yes ^{††}	Yes

[†] Not available on HP LaserJet II, IID, III and IIID printers.

[‡] Requires HP Flash SIMM upgrade.



HP JetDirect Cards

for Ethernet, Token Ring
and LocalTalk networks

The internal print server for
sharing these printers:

- HP Color LaserJet
- HP LaserJet 4V, 4MV, 4Si, 4Si MX, IIISi, 4 Plus, 4M Plus, 4 and 4M printers
- HP PaintJet XL300 and XL300/PS color printers
- HP DeskJet 1200C and 1200 C/PS printers
- HP DesignJet, DesignJet 600, 650C and 650C/PS printers

COMPATIBLE

- Multi-protocol card for HP printers
- Support for all major network operating systems for Ethernet, Token Ring and LocalTalk networks
- lpd support for UNIX, Windows NT
- Fully compliant with Novell NetWare Directory Services (NDS)
- Flash memory for easy software upgrades over the network
- SNMP agents for support of industry-standard network management applications

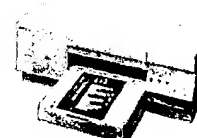
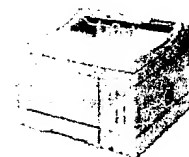
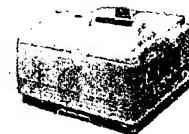
SIMPLE

- Easily install and manage HP printers for direct LAN connectivity
- Support for up to 16 NetWare file servers and 64 print queues
- Powerful HP JetAdmin software for Novell NetWare, Windows 95, IBM LAN Server and UNIX enables LAN administrators to remotely configure, monitor and manage all HP JetDirect-connected printers
- Automatic network/protocol switching for simplified printing in mixed environments
- Automatic driver installation, printer configuration and remote printer status on your PC screen

FAST

- Better overall printing performance than PC print servers and PC parallel-port connections
- Eliminate PC parallel port bottlenecks with throughput up to 350 KBps and reduce demands on network servers

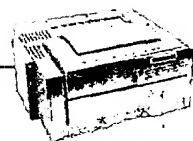
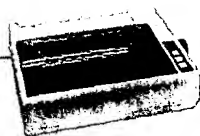
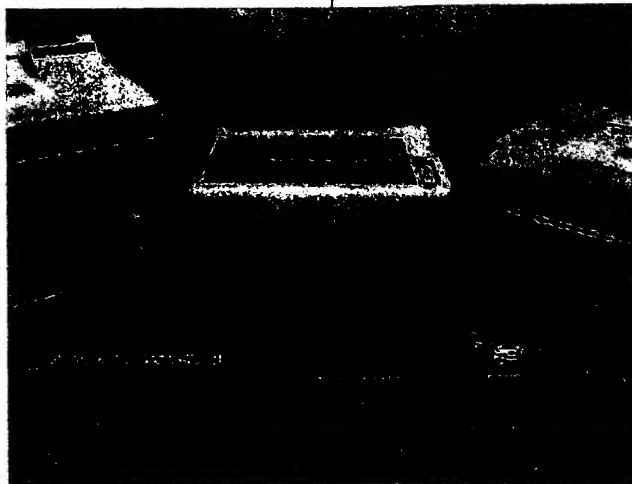
PROVEN HP RELIABILITY



HP JetDirect EX Plus3 Print Servers

for Ethernet and
Token Ring networks

The multi-port external
print server for sharing
any 3 parallel printers.



COMPATIBLE

- Multi-protocol print server — ideal for shared printing in mixed-LAN environments
- Support for all major network operating systems for Ethernet and Token Ring networks
- lpd support for UNIX, Windows NT
- Fully compliant with Novell NetWare Directory Services (NDS)
- Flash memory for easy software upgrades over the network
- SNMP agents for support of industry-standard network management applications

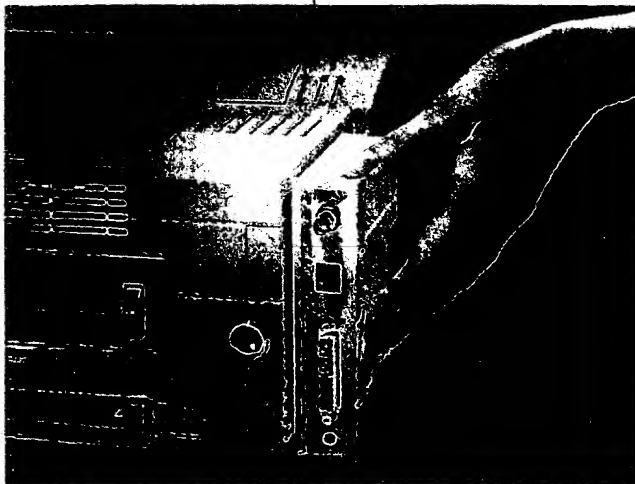
SIMPLE

- Easily install and manage any 3 printers — anywhere on your network — for direct LAN connectivity
- Support for up to 16 Novell NetWare file servers and 64 print queues
- Powerful HP JetAdmin software for Novell NetWare, Windows 95, IBM LAN Server and UNIX enables LAN administrators to remotely configure, monitor and manage all HP JetDirect-connected printers
- Automatic network/protocol switching for simplified printing in mixed environments
- Automatic driver installation, printer configuration and remote printer status on your PC screen

FAST

- Three high-speed HP Bi-Tronics ports, IEEE 1284 compliant
- Better overall printing performance than PC print servers and PC parallel-port connections
- Eliminate PC parallel port bottlenecks with throughput up to 230 KBps and reduce demands on network servers

PROVEN HP RELIABILITY



HP JetDirect EX Print Servers

for Ethernet and Token
Ring networks

The single-port external
print server for sharing
any parallel printer.

COMPATIBLE

- Multi-protocol print server — ideal for shared printing in mixed-LAN environments
- Support for all major network operating systems for Ethernet and Token Ring networks
- lpd support for UNIX,* Windows NT*
- Fully compliant with Novell NetWare Directory Services (NDS)
- Flash memory for easy software upgrades over the network*
- SNMP agents for support of industry-standard network management applications

SIMPLE

- Easily install and manage any printer — anywhere on your network — for direct LAN connectivity
- Support for up to 8 NetWare file servers and 32 print queues
- Powerful HP JetAdmin software for Novell NetWare, Windows 95, IBM LAN Server and UNIX enables LAN administrators to remotely configure, monitor and manage all HP JetDirect-connected printers
- Automatic network/protocol switching for simplified printing in mixed environments
- Automatic driver installation, printer configuration and remote printer status on your PC screen

FAST

- One high-speed HP Bi-Tronics port, IEEE 1284 compliant
- Better overall printing performance than PC print servers and PC parallel-port connections
- Eliminate PC parallel port bottlenecks with throughput up to 230 Kbps and reduce demands on network servers

PROVEN HP RELIABILITY

* Requires HP Flash SDRAM for Ethernet (J2547A) or Token Ring (J2548A).



Get improved printing performance and location flexibility.

HP JetDirect Print Servers eliminate the PC parallel port bottleneck so you can take advantage of full network speed to maximize print throughput. Your printers switch automatically between network protocols.

That's not all. With HP JetDirect Print Servers and standard network cabling, you can place printers anywhere on the LAN. It's one more way Hewlett-Packard makes network printing work for you.

A good connection to make.

There's no better time than now to put your networking skills to good use. Refer to the chart below and call the HP FIRST fax service at

1-800-333-1917 to receive information about the specific HP JetDirect Print Server that matches your network and printer configuration.

For more information, call the HP FIRST fax service: 1-800-333-1917.




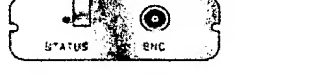





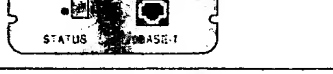



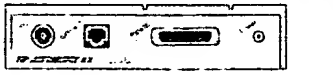
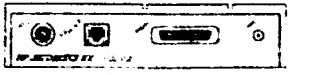
Printer Connection	Network Platform	Ask for Document I.D. #
HP JETDIRECT CARDS		
HP Color LaserJet HP LaserJet 4V, 4MV, 4Si, 4Si MX, IIISi, 4 Plus, 4M Plus, 4 and 4M printers HP PaintJet XL300 and XL300/PS color printers HP DeskJet 1200C and 1200C/PS printers HP DesignJet, DesignJet 600 and 650C/PS printers	Ethernet/Token Ring/ LocalTalk	7393
HP JETDIRECT EX PLUS3 PRINT SERVERS		
Any 3 parallel printers	Ethernet/Token Ring	7594
HP JETDIRECT EX PRINT SERVERS		
Any parallel printer	Ethernet/Token Ring	7569
HP JetDirect PCP/IP Solutions		7597
HP JetDirect Upgrade Solutions		7595
HP JetDirect UNIX Electronic Software Access Instructions		7398
HP JetDirect Flash Download Manager		7394
HP JetDirect/NetWare 4.x Implementation Guide		7596
HP JetAdmin Utility for Windows 95		7445



Ordering Information

HP Peripheral	Product Number
HP JETDIRECT CARDS	
HP Color LaserJet	J2550A
HP LaserJet 4V, 4MV, 4Si, 4Si MX, IIISi, 4 Plus, 4M Plus, 4 and 4M printers	J2552A
HP PaintJet XL300 and XL300/PS color printers	J2555A
HP DeskJet 1200C and 1200C/PS printers	
HP DesignJet, DesignJet 600, and 650C/PS printers	
HP LaserJet III, IIID, II and IID printers	C2071A
	C2071B
	C2071C
	C2071D
	C2071E
	C2071F
	C2071S
HP JETDIRECT EX PLUS3 PRINT SERVERS	C2071T
Any 3 parallel printers	J2593A
	J2594A
HP JETDIRECT EX PRINT SERVERS	
Any parallel printer	J2382B
	J2383B

* Customer must purchase an HP JetDirect software kit for HP-UX (J2374C) or SunOS/Solaris (J2375C) if using an HP JetDirect interface in a UNIX environment. One software kit can be purchased for loading onto multiple host systems and will support multiple HP JetDirect interfaces. U.S. list price for each software kit is \$199.00. SCO UNIX software is provided directly by The Santa Cruz Operation, Inc. IBM AIX software is provided directly by IBM.

		NETWORK OPERATING SYSTEM (PROTOCOL) SUPPORT							
HP JetDirect Print Servers	Network Type/Port	Novell NetWare v2.15c, 2.2, 3.11, 3.12, 4.0, 4.1 (IPX/SPX)	Microsoft® LAN Manager v2.0C, 2.1, 2.2 (DLC/LLC)	Windows 95 Networking (IPX/SPX)	Windows NT v3.1, 3.5 Windows for Workgroups v3.1, 3.11 (DLC/LLC)	IBM LAN Server v1.3, 2.0, 3.0, 4.0 (DLC/LLC)	HP-UX v4.x, 10.0; Solaris v2.2, 2.3, 2.4; SunOS v4.1.3; SCO® UNIX V/386 v2.2, 3.24 (TCP/IP); IBM AIX v2.5, 4.1.1	Apple EtherTalk System 6 and 7	hp for UNIX, Windows NT 3.5 (TCP/IP)
	Ethernet/802.3 RJ-45 (10Base-T)	•	•	•	•	•	•	•	•
	Ethernet/802.3 BNC (Thin Coax) RJ-45 (10Base-T) LocalTalk System 6 & 7	•	•	•	•	•	•	•	•
	Token Ring/802.5 DB9, RJ-45	•	•	•	•	•	•		•
	Ethernet/802.3 BNC (Thin Coax)	•							
	Ethernet/802.3 RJ-45 (10Base-T)	•							
	802.3 BNC (Thin Coax)		•		•	•			
	802.3 RJ-45 (10Base-T)		•		•	•			
	Token Ring/802.5 DB9	•							
	Token Ring/802.5 DB9		•		•	•			
	Ethernet RJ-45 (10Base-T)						•		
	Ethernet BNC (Thin Coax)						•		
	Ethernet/802.3 BNC (Thin Coax) RJ-45 (10Base-T)	•	•	•	•	•	•	•	•
	Token Ring/802.5 DB9, RJ-45	•	•	•	•	•	•	•	•
	Ethernet/802.3 BNC (Thin Coax), RJ-45 (10Base-T)	•	•	•	•	•	•	•	•
	Token Ring/802.5 DB9	•	•	•	•	•	•		•

** Apple LocalTalk/EtherTalk are not available on the HP DesignJet and DesignJet 600 plotters.

*** Apple EtherTalk is supported only with Bi-Tronics-based peripherals with Adobe™ PostScript™ Level 2.

† Requires HP Flash SIMM for Ethernet (J2547A) or Token Ring (J2548A).

†† The DLC/LLC protocol is only supported on one port.

Hewlett-Packard peripherals and personal computers are available at authorized HP dealers worldwide. In North America, call toll free for the authorized HP dealer nearest you:

United States:
1-800-752-0900 or 1-800-LASERJET

Canada:
1-800-387-3867

For information outside North America, call the local HP sales office listed in your telephone directory or contact any of the HP regional offices below.

Europe/Africa/Middle East:
Hewlett-Packard S.A.
150, Route du Nant-d'Avril
CH-1217 Meyrin 2
Geneva, Switzerland
(22) 780 8111

Japan:
Yokogawa-Hewlett-Packard Ltd.
15-7 Nishi Shinjuku 4 Chome
Shinjuku-ku
Tokyo 160, Japan
(03) 3331 6111

Latin America:
Hewlett-Packard
Latin America Region Headquarters
Monte Pelvoux No. 111
Lomas de Chapultepec
11000 Mexico, D.F.
(525) 326-4044

In Asia Pacific, please call your local HP sales office or representative:

Australia:
613-272-2895

New Zealand:
649-357-2000

Singapore:
65-291-9088

Malaysia:
603-298-6555

Hong Kong:
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Taiwan:
886-02-712-0404

Korea:
822-769-0114

India:
911-463-2379

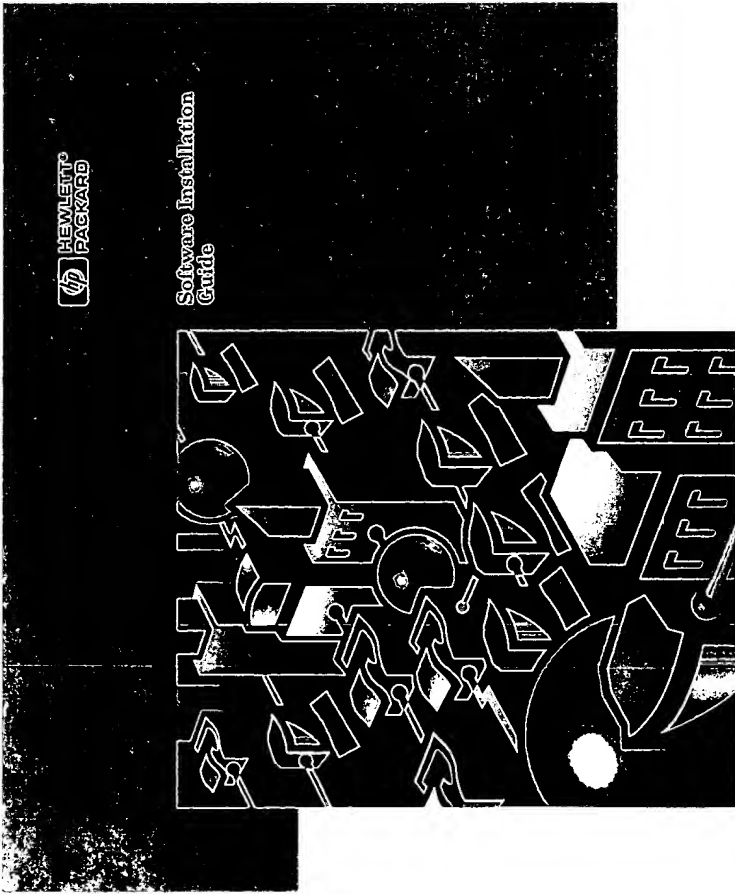
China:
861-505-3888

Thailand:
662-254-6720

Warranty

HP JetDirect Cards and HP JetDirect EX Print Servers have a 1-year return-to-HP warranty. HP JetDirect EX Plus3 Print Servers have a 3-year return-to-HP warranty. If an HP JetDirect Card is bundled or installed in a printer with an onsite warranty, the HP JetDirect Card assumes the same warranty as the printer.

LAN Manager, Windows NT, Windows for Workgroups and Windows 95 are products of Microsoft Corporation. Microsoft is a registered trademark of Microsoft Corporation. IBM LAN Server is a product of International Business Machines Corporation. Novell and NetWare are registered trademarks of Novell, Inc. SunOS is a product of Sun Microsystems. UNIX is a registered trademark of UNIX System Laboratories. Adobe, Postscript, and the Postscript logo are trademarks of Adobe Systems Incorporated which may be registered in certain jurisdictions. LocalTalk, EtherTalk, and Macintosh are products of Apple Computer, Inc. All other brand and product names are trademarks or registered trademarks of their respective companies. Information contained in this document is subject to change without notice.



HP JetDirect Print Server

Software Installation Guide

Exhibit 5

HP JetDirect Print Server

Warranty

The information contained
in this document is subject
to change without notice.

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Novell, Inc.

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and Novell® are registered
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LAN Server®, Operating
System/2®, are registered
trademarks of International
Business Machines Corp.
Ethernet is a registered
trademark of Xerox
Corporation. PostScript is a
trademark of Adobe
Systems, Incorporated,
which may be registered in
certain jurisdictions.
UNIX is a registered
trademark of UNIX System
Laboratories Inc. in the
U.S.A. and other countries,
licensed exclusively through
X/Open Company Limited.

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HP JetDirect Print Server Manuals

The manuals listed below are shipped with your print server or with printers that have factory-installed print servers.

- *Getting Started Guide* (shipped with most printers that have factory-installed HP JetDirect print servers)
 - This manual, the *HP JetDirect Print Server Software Installation Guide*
- You also can order the Software Documentation Kit (product number J2559C), which includes software and manuals for current HP JetDirect print servers.

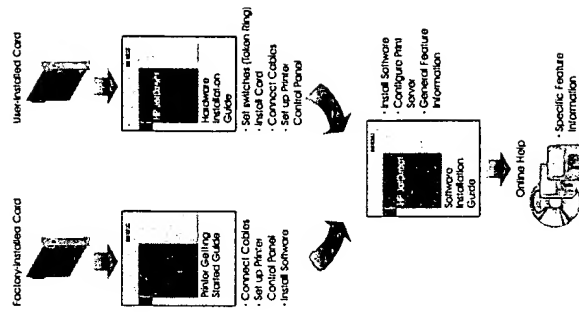
You can order manuals from HP's Support Materials Organization (SMO) by calling 1-800-227-8164 (U.S.) or by contacting your HP authorized dealer.

The *HP JetDirect Print Server Hardware Installation Guide* is also shipped with non-factory installed print servers.

1 HP JetDirect Introduction

Documentation Map

The following illustration shows the recommended path for setting up your HP JetDirect print server with the available documentation.



Before Installing the Software

Before installing the HP JetAdmin software, complete the following tasks:

- Make sure that the network is up and running.
- Install and set up the printer according to its instructions.
- Install all other options (such as a duplexing unit for two-sided printing).
- If you are using a print server that was not installed at the factory, install the print server.
- Connect the print server to the network and print a configuration page (also called self-test page or configuration plot). See the user's manual for your printer for instructions on printing configuration pages.

HP Customer Support Numbers

If you need assistance, call one of the following numbers.

In the USA and Canada, call 208-323-2551		
In Europe, call one of the following numbers in the Netherlands for the language you wish to speak.		
Danish	31-20-6816171	German 31-20-6817174
Dutch	020-6816473	Italian 31-20-5813318
English	31-20-6828291	Norwegian 31-20-6820094
Finnish	31-20-6811214	Spanish 31-20-5813319
French	31-20-6818260	Swedish 31-20-6811805
In Japan, call 81-3-3335-8333		
For all other countries, contact your reseller.		



Software, Driver, and Flash Image Upgrades

Hewlett-Packard offers downloadable electronic upgrades from HP FIRST for HP JetDirect print servers with internal Flash memory and for HP JetDirect print servers that have been upgraded to Flash memory using Flash SIMMs (Single Inline Memory Modules).

For information about downloadable electronic upgrades, request document number 7394. For information about the Flash SIMM upgrades, request document 7695. Current information about drivers, software versions, and HP JetDirect Flash images are available through the following areas:

CompuServe	Receive drivers and upgrades by downloading them to your computer from the HP Forum (GO HPPER) on CompuServe. To sign up for CompuServe call (800) 848-8199 and ask for Representative M51, USA only.		
HP Distribution Center	Order drivers and upgrades for HP printers by calling HP Distribution at (970) 339-7009. USA only. (Information on LAN Server for OS/2 WARP is not available from HP Distribution).		
Internet	Download printer drivers and upgrades from HP's anonymous FTP site at hp.hp.com. (login: anonymous).		
World Wide Web	Access HP's anonymous FTP site using URL: http://www.hp.com/go/cposupport or access HP's web site at http://www.hp.com/go/network_cpy		
HP BBS	For 24-hour access to the HP Bulletin Board Service to download drivers, utilities, software application notes, and support information for HP computer and peripheral products call (208) 344-1691. Upon initial use of this service, register by typing your name and address to establish an account and password for future use.		
HP FIRST	For 24-hour access to information on ordering HP printer drivers and upgrades, call HP FIRST at the following numbers. This information is sent by fax. For countries that are not listed, contact your local HP dealer.		
Country*	Phone Number	Country	Phone Number
USA	(800) 333-1917 or (208) 344-4809	Germany	0130-8100-61
United Kingdom	0-800-96-02-71	France	05-90-5900
Netherlands	06-02-22-420	Switzerland (German)	155-1527
Belgium (Dutch)	078-11-19-06 or 0800 11906	Switzerland (French)	155-1526
Belgium (French)	078-11-70-43 or 0800 17043	Austria	0660-8128
Finland	9800-13134	Denmark	800-10453
Norway	800-11319	Sweden	020-795743
English (outside of UK)	(31) 20-681-5792		

* For countries not listed, contact your local HP dealer.

HP Support for Novell NetWare Networks

Introduction

This chapter explains how to use the HP JetAdmin software in a Novell NetWare environment. If you are using the HP JetAdmin software in a Windows 95 Peer-to-Peer environment, see Chapter 3.

HP JetAdmin software, version 2.11 or later, is an administrative tool used to install, configure, and manage printers connected to a network using an HP JetDirect print server. The HP JetAdmin software operates as a Microsoft Windows application. If you are using HP JetAdmin software with a lower version number, see the document that came with the software or update for your printer.

HP JetAdmin software supports native NetWare Directory Services (NDS). Information on configuring your printer for NDS is included in the section "Configuring a New or Existing Printer in Queue Server Mode (NDS)" in this chapter.

NOTE

The HP JetAdmin software described in this chapter covers HP JetAdmin management for Windows 3.1x or Windows 95 in a Novell NetWare environment. The HP JetAdmin software described in Chapter 3 covers HP JetAdmin management for Windows 95 Peer-to-Peer networks.

Within Novell NetWare environments, there are also two versions of the HP JetAdmin software, which are discussed in this chapter. The 16-bit version supports Windows 3.1x clients (disks labeled "HP JetAdmin & JetPrint Administration and Printing Utilities for Windows 3.1x Systems"), and the 32-bit version supports Windows 95 clients (disks labeled "HP JetAdmin Printer Administration Utilities for IPX-Compatible Networks"). The differences between these versions is how you install the software and how you access user features. The 16-bit version accesses user features using HP JetPrint, whereas the 32-bit version accesses user features through the Taskbar in Windows 95.

The following capabilities are available, depending on your printer, through the HP JetAdmin software:

Network Administration Features

- Set up a new print server and printer.
- Change an existing printer configuration.
- Install and associate Windows printer drivers with a network printer.
- For Token Ring, select locally administered addressing.
- Verify printer status and capabilities.
- Remotely select printer default settings including media type, number of copies, page orientation, printer resolution, Resolution Enhancement (REB), print density, and more.
- Control printer error handling including PostScript Jam Recovery, Clearable Warnings, and Auto Continue.
- Lock out the printer control panel or enable password protection.
- View network diagnostic information.
- Configure the HP JetDirect print server including frame types, protocol stacks, time intervals, and error notification.
- Reset the HP JetDirect print server.

End User Features

- View and delete your own print jobs.
- Install Windows drivers automatically on workstations.
- Print using the "drag-and-drop" technique.
- View printer and print server status.
- Set up a default printing queue for all of your Windows applications.

For more information about a procedure or window in the HP JetAdmin software, click **Help**.

Software and Memory Requirements

Supported Servers

- Queue Server mode using NetWare version 3.x or 4.x (version 2.x is not supported).
- Remote Printer mode using NetWare version 3.x or 4.x.
- NetWare Print Server version 1.22 or greater.

If you do not have one of the Novell products listed above, you need to obtain one from your authorized Novell reseller before continuing.

Supported Clients for HP JetAdmin Software

HP JetAdmin software supports multiple clients in a Novell NetWare environment. For Windows 3.1x and WinOS2, use the 16-bit version (disks labeled "HP JetAdmin & JetPrint Administration and Printing Utilities for Windows 3.1x Systems"). For Windows 95, use the 32-bit version (disks labeled "HP JetAdmin Printer Administration Utilities for IPX-Compatible Networks").

- Windows 3.1x
- Windows 95
- OS/2 2.x and above for WinOS2

Disk Space Required

- 4 Mbytes

2 Novell
NetWare

NetWare 3.x and 4.x Mixed Environments

HP JetDirect print servers support NetWare 4.x environments in native NDS mode and NetWare 3.x and 4.x environments in bindery services mode. When using HP JetDirect print servers in a mixed NDS and bindery environment, there are certain factors you should consider.

Object Names in Mixed NetWare Environments

For compatibility with NetWare 3.x, follow the bindery naming conventions (which differ from the NDS naming conventions) when naming users, queues, print servers, and file servers in NetWare 4.x.

Because a name created with NDS conventions can be longer and use different characters than a name created using bindery conventions, two problems can arise when you are trying to view the name in a bindery context: the name may not appear, or it may be changed when translated to a bindery name.

To make sure that the name is visible in both the bindery and NDS modes and meets the requirements for compatibility with the print server name in the HP JetAdmin software, use the following naming guidelines:

- Letters A through Z, uppercase only
- Numbers 0 through 9
- Limited special characters, such as the underline _ , parentheses (), or hyphen -
- Up to 30 characters total for the printer name and up to 26 characters total for the print server name

EVERYONE Group

In NetWare 3.x, NetWare automatically creates the group "EVERYONE," which is used in the bindery services context. Since NetWare 4.x does not automatically create this group, the HP JetAdmin software creates the "EVERYONE" group to grant automatic access rights to the printer for bindery services context. You can then use NWADMIN to upgrade this group with users that are not in the bindery context.

NDS User "Admin"

In order for the user Admin to access print queues in NDS context, "Admin" must be added to the group "EVERYONE." Use NWADMIN or NETADMIN to add the Admin user to the group "EVERYONE."

NetWare Directory Services (NDS)

HP JetDirect print servers support native NDS. When using NDS mode, you can connect your printers anywhere within one NDS tree. You can locate up to 16 print servers anywhere on the tree.

The 16 print servers can service a total of 64 queues in any combination. For example, you could have 1 print server with 64 queues, 16 print servers with 4 queues per server, or some other similar combination.

If you are using both NDS and bindery services, you still have a maximum of 16 print servers and 64 queues.

Network Modes

The HP JetDirect print server allows you to set up your network printer in either of two operating modes: Hewlett-Packard's Queue Server mode or Novell NetWare's Remote Printer mode (using a Novell server running print server software).

Table 2-1 compares Queue Server mode to Remote Printer mode (called NPrinter mode in NetWare 4.x).



Table 2-1. Comparison of Modes		
Criteria	Queue Server Mode	Remote Printer Mode
Print Server	Does not rely on Novell print server functions. Does not require a Novell NetWare PSERVER.nlm. Uses one user license per file server for each printer.	Requires a Novell NetWare print server, but allows implementation of forms and provides the best integration with NetWare print utilities (for example, PCONSOLE or NWADMIN). Using .EXE, the print server consumes one user license for all printers. Using .nlm, the print server does not consume any license slots.
Performance	Highest performance (as observed when printing raster graphics and downloading fonts).	Good performance (for better remote performance, use a dedicated Novell NetWare print server).
Setup	Easiest to set up, with fewer required steps. PCONSOLE is not required for Bindery Services mode. NWADMIN is required for some steps in NDS mode.	Requires additional steps, but provides full integration with NetWare print utilities (for example, PCONSOLE or NWADMIN).
File Server and Queues	Supports 16 file servers and 64 print queues per HP JetDirect print server port.	The Novell print server supports 8 file servers.
Security	Prevents other printers from accessing data sent to the configured queue(s) without SUPERVISOR's intervention. Does not require unencrypted passwords in NetWare 386. Data is password-protected from the file server to the printer.	Does not require unencrypted passwords. Data is password-protected from the file server to the print server.
Status	Printer status is available through HP JetAdmin software and the configuration page (also called the self-test page or configuration plot.) Job status is available through job notification. Error notification is configurable through HP JetAdmin software (Bindery Services) or NWADMIN (NDS).	Printer status is available through HP JetAdmin software, the print server window, PSC, PCONSOLE (or NWADMIN for NetWare 4.x), and the configuration page (also called the self-test page or configuration plot.) Job status is available through the print server window, PSC, PCONSOLE, and job notification.
Advanced Print Server Features	Does not support forms or alternative queue service modes.	Supports forms and all queue service modes.
NDS Support	Supports a single NDS tree with up to 16 file server connections (per print server port). File servers, print servers, and printers can be located in different containers within the tree.	Supported through the Novell NetWare PSERVER.nlm.

Installing the HP JetAdmin Software

The following instructions show how to install the HP JetAdmin software.

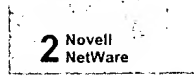
Installing HP JetAdmin on Windows 3.1x

If you are installing the software from the CD-ROM that came with your HP JetDirect print server or printer, use the instructions included with the CD-ROM or in the getting started guide for your printer.

NOTE

1. Log onto any user workstation with Supervisor or Admin privileges.
2. Insert disk 1 of the "HP JetAdmin & JetPrint Administration and Printing Utilities for Windows 3.1x Systems" disks into your floppy drive A.
3. Click **F**ile in the Program Manager, then click **R**un.
4. Type **A:\SETUP.EXE**, then press **Enter**.
5. Follow the instructions on the screen.

The installation procedure creates a separate group for the HP JetAdmin software. The icon for the HP JetAdmin software and the HP JetPrint software will appear in this group. For more information on HP JetPrint software, see "Using the HP JetPrint Software (Windows 3.1x)" later in this chapter.



Installing HP JetAdmin on Windows 95 from the Windows 95 CD-ROM

Before you install the HP JetAdmin software, make sure the following tasks have been performed:

- The Microsoft Client for NetWare networks or the Novell NetWare Client 32 for Windows 95 must be loaded on your system.
- The Windows 95 CD-ROM is inserted in your CD-ROM drive.
- The NWCALLS.DLL file is available to load on your system when it is requested.

NOTE

The following procedure assumes you installed Windows 95 from CD-ROM. If you installed Windows 95 from floppy disks, you need to install the HP JetAdmin software from floppy disks.

1. Using the right mouse button, click **Network Neighborhood**, then click **Properties**.
2. Click **Add**.
3. Click **Service**, then click **Add** again.
4. Click **Hewlett-Packard** in the **Manufacturers** box.
5. Click **HP JetAdmin**, then click **OK**.
6. Click **OK**, then follow the instructions on the computer screen.

NOTE

Make sure that the IPX/SPX-compatible Protocol is loaded and that you have installed the Microsoft Client for NetWare networks or the Novell NetWare Client 32 for Windows 95.

Configuring a New or Existing Printer in Queue Server Mode (NDS)

NDS gives you the ability to have NetWare print queues and print servers in any NDS context. The actual print queue, printer, and print server object are created using the Novell NWADMIN or PCONSOLE utility. The HP JetDirect print server is then assigned to this configuration with the HP JetAdmin software with the following procedure.

Before you configure the HP JetAdmin software, make sure the following tasks have been performed:

- The HP JetDirect print server is installed in the printer.
- The printer is connected to the network.
- The printer is turned on, is online, and you have a configuration page (also called the self-test page or configuration plot).

If you have not printed a configuration page from your printer, see the hardware installation guide for your print server or your printer's getting started guide for instructions.

NOTE

If you are using Bindery Services mode and NDS mode on the same file server, you must log on separately to each mode.

1. Log onto the NDS Tree with Admin privileges at any user workstation.
2. Start NWADMIN or PCONSOLE. If you are using PCONSOLE, make sure you are in NDS mode.
3. Select the context or organizational unit(e) where you want to locate the print queue and print server object (for example, `lj.mytown.marketing.acme_corp`).
4. Create a print queue object (for example, `LJ_Queue`).
5. Create the printer object by which the Novell utilities will reference the printer (for example, `LJ_Printer`).

NOTE

Error notification must be configured through NWADMIN and not through the HP JetAdmin software.

6. Assign the print queue object to the printer object.



7. Create a print server object (for example, `LJ_pServer`).

If you are configured to service both NDS and Bindery mode queues at the same time (either on the same server or different servers), make sure the print server name is the same in NDS and Bindery emulation mode.

NOTE

Do not set a password for the print server object. The HP JetDirect print server automatically sets the password when you first log on. If you set a password for the print server object, the print server cannot log on.

8. Assign the printer object to the print server object.

NOTE

If you are using NetWare 4.1 or higher, select the print server, then press the Print Layout button (NWADMIN) to make sure your configuration is valid.

9. Exit the NWADMIN or PCONSOLE utility.

10. Double-click the HP JetAdmin icon on your Windows Control Panel or in the HP LaserJet group (Windows 3.1).

NOTE

To make printer configuration easier, HP JetAdmin offers Interview Mode, which uses the Next button to guide you through the configuration process. After you become familiar with printer configuration in the HP JetAdmin software, you may want to turn Interview Mode off. Interview Mode is selected as the default when the software is installed.

To select Interview Mode, click Options at the top of the main window, then click Interview Mode.

11. To change an existing printer configuration, highlight the printer you want in the list of printers.

12. Click Device on the menu bar at the top of the main window, then do one of the following:

- Click New to configure a new printer.
- or -
- Click Modify to configure an existing printer.



13. If you are configuring a new printer:

- Select the network address of the HP JetDirect print server attached to the new printer, then click **Configure**. The address of the HP JetDirect print server is listed on the configuration page (also called the self-test page or configuration plot).

14. Type the name of the printer. This box should contain the same name created in step 5 (for example, `LJ_PServer1`). This is the name that will appear on the network in the HP JetAdmin software.

15. Type a general description of the printer such as the type of printer, options in the printer, and the printer location. This description is optional.

16. Click the **NetWare** tab or **Next**.

17. Click **Operating Mode**, then select **Queue Server Mode** as the operating mode.

18. Click **NetWare Directory Services**.

19. Select the down arrow in the **NDS Tree Name** box, then select the appropriate tree name.

20. Type the NDS context or organizational unit(s) from step 3 in the **Print Server Context** box (for example, `1j.mytown.marketing.acme_corp`).

21. Click **OK** or **Next**, then click **Finish**.

You have now completed the configuration of the printer. To verify the configuration, see the section "Verifying the Configuration" in this chapter.



Configuring a New or Existing Printer in Remote Printer Mode (Bindery)

Before you configure the HP JetAdmin software, make sure the following tasks have been performed:

- The HP JetDirect print server is installed in the printer.
- The printer is connected to the network.
- The printer is turned on, is online, and you have a configuration page (also called the self-test page or configuration plot).

If you have not printed a configuration page from your printer, see the hardware installation guide for your print server or your printer's getting started guide for instructions.

1. Run **PCONSOLE** and create or modify your selected print server.
 - Configure a print server slot with **Type Remote**, **Other Unknown** (or **Other Unknown in 4.x**).
 - Assign a print queue to the printer slot (printer number).
 - Restart your print server at the server console by typing **UNLOAD PSERVER** and the name of your print server.
 - Type **LOAD PSERVER** and the same print server name.
2. Log onto the network as **Supervisor** or **Admin** at any user workstation.
3. Double-click the **HP JetAdmin** icon on your **Windows Control Panel** or in the **HP LaserJet** group (**Windows 3.1**).

NOTE

To make printer configuration easier, HP JetAdmin offers **Interview Mode**, which uses the **Next** button to guide you through the configuration process. After you become familiar with printer configuration in the HP JetAdmin software, you may want to turn **Interview Mode** off. **Interview Mode** is selected as the default when the software is installed.

To select **Interview Mode**, click **Options** at the top of the main window, then click **Interview Mode**.

4. To change an existing printer configuration, highlight the printer you want in the list of printers.



5. Click Device on the menu bar at the top of the main window, then do one of the following:
 - Click New to configure a new printer.
 - or -
 - Click Modify to configure an existing printer.
6. If you are configuring a new printer:
 - Select the network address of the HP JetDirect print server attached to the new printer, then click Configure. The address of the HP JetDirect print server is listed on the configuration page (also called the self-test page or configuration plot).
7. Type the new name of the printer. This is the name that will appear on the network.
8. Type a general description of the printer such as the type of printer, options in the printer, and printer location. This description is optional.
9. Click the NetWare tab or Next.
10. Click Operating Mode, then select Remote Printer as the operating mode.
11. Select the print server's name in the Novell Print Server box.
12. Select the printer number (assigned in PCONSOLE in step 1) in the Printer Number box.
13. Click Queues.
 - To add or remove queues from the list, click Change, add or remove queues for the printer, then click OK.
14. If desired, click the Optional tab or Next, then click Drivers to associate printer drivers with this printer.
 - To install a driver, click Browse, select the manufacturer, select the printer driver, then click OK. (Click Have Disk in the Browse window to install a driver from a disk.)
 - To select a driver, click the down arrow in the Default printer driver box, then select the driver.
 - To remove a driver, click the down arrow in the Default printer driver box, select the driver, then click Remove.

NOTE

If you associate printer drivers with printers, client machines can be updated automatically to the appropriate printer driver when they connect to a printer. Associating printer drivers with printers is optional.

15. If desired, click Notification to view the users or groups to be notified of problems with this printer.

- To add or delete users or groups from the list, click Change, add or delete users or groups, then click OK.

16. Click OK or Finish.

You have now completed the configuration of the printer. To verify the configuration, see the section "Verifying the Configuration" in this chapter.

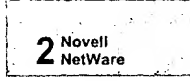
Verifying the Configuration

If your printer supports the PCL printer language, follow the steps below to verify configuration. Otherwise, print a test file from an application on your system. If the file prints correctly, you have successfully configured your print server and printer.

1. Double-click the HP JetAdmin icon on your Windows Control Panel or in the HP LaserJet group (Windows 3.1).
2. Select the printer.
3. Click Device on the menu bar at the top of the main window.
4. Click Test Page to send a test page to the printer.

A sheet with information valuable to users on your network should print. If the test page does not print, see the troubleshooting chapter in this manual.

To configure your clients for printing, see your operating system documentation.



Using the HP JetPrint Software (Windows 3.1x)

You or your network users can manage printer functions from the HP JetPrint software by using the procedures described below. Some functions are available only if the selected printer or print server supports that function.

For Windows 3.1x, you can access these features by double-clicking on the HP JetPrint icon in the HP LaserJet group.

NOTE

HP JetPrint software functionality is built into Windows 95. To access these features from Windows 95, double-click the printer icon in the Taskbar.

Selecting your default printer

1. Double-click the HP JetPrint icon in the HP LaserJet group (Windows 3.1x).
2. Select a printer type from the Printer Type list. Available printer queues appear.
3. Click Set Default or double-click a print queue name to make that queue the default queue/printer. The default printer name appears with a description of the printer and its status.

This printer will remain the default printer after you exit from the HP JetPrint software.

NOTE

If no drivers are associated with the queue, if your system does not have the driver loaded, or if a new version of the driver is available, the program may prompt you to have the HP JetPrint software automatically install a driver.

Clients can be updated automatically to the appropriate printer driver when they connect to a printer if you associate printer drivers with printers. Associating printer drivers with printers is optional.

Viewing printer status from your workstation

1. Double-click the HP JetPrint icon in the HP LaserJet group (Windows 3.1x).
2. Click the appropriate print queue or printer to select it.

The current printer status, description, jobs queued, and configuration information will appear in the window. This information is available for NetWare (networked) printers but not for local (attached to workstation) printers.

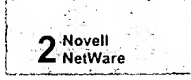
3. Click the Stoplight icon to get an explanation of the status.

Printing a file using "Drag-and-Drop" without opening an application

1. Double-click the HP JetPrint icon in the HP LaserJet group (Windows 3.1x).
2. Minimize the HP JetPrint window to its icon.
3. Open File Manager and highlight the name of the file you want to print.
4. Drag the file you want to print to the HP JetPrint icon.

Loading HP JetPrint automatically when Windows starts

1. Double-click the HP JetPrint icon in the HP LaserJet group (Windows 3.1x).
2. Click Preferences in the Taskbar.
3. In the Preferences window, click the Auto Start check box.
4. Click OK to save the change. The HP JetPrint icon automatically appears the next time Windows is opened.



Associating drivers with a queue

Associating drivers with a queue allows Windows clients to use the HP JetPrint software to automatically install drivers when a network printer is selected.

1. Double-click the HP JetPrint icon in the HP LaserJet group (Windows 3.1x).
2. Select the default print queue. The Select Printer Driver window appears if no driver or more than one driver was in HP JetAdmin's Selected Driver list.
3. In the Select Printer Driver window, associate an installed driver with the selected print queue by selecting the driver and clicking **Add**.

For a complete listing of HP JetPrint functions, click **Help** in the HP JetPrint main window.



Accessing Job Details

Job Details enables you to view and delete your own print jobs and provides information on the status of your print jobs in the queue. With JetAdmin (version 2.11 or above) and JetPrint (version 2.11 or above), Job Details includes the following information:

- Document name
- Status (printing, spooling, etc.)
- Owner
- Progress (in MB)
- Time print job was started

To access Job Details from HP JetAdmin

1. Click Device at the top of the main menu.
2. Click Jobs.

To access Job Details from HP JetPrint (Windows 3.1)

- Click Job Details at the bottom of the screen.

To access Job Details from Windows 95

1. Using the right mouse button, click the appropriate printer icon in the Taskbar.
2. Click Jobs.

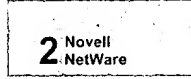
NOTE

Additional Status Information may be available for certain HP printers by double-clicking on the appropriate printer icon in the Taskbar in Windows 95.

Removing Printers from NetWare Networks

The first step in removing a printer from the network is to delete the printer configuration at the server. The printer must not be servicing a job when you do this. After deleting printer configuration, perform the following steps:

1. Double-click the HP JetAdmin icon on your Windows Control Panel or in the HP LaserJet group (Windows 3.1).
2. Select the appropriate printer.
3. Click Device on the menu bar at the top of the main window, then click Properties.
4. Click the JetDirect tab.
5. Click Reset JetDirect Card.
6. Click Reset Card to Factory Defaults.



NOTE	Resetting the print server from a NetWare network resets all protocol configurations on the print server to factory defaults.
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7. Click OK.

8. Turn off the printer.

The printer should still appear in the bindery for about 2 minutes.

CAUTION	If you are using thin Ethernet coaxial cable, disconnect the Ethernet cable from the print server with the BNC "T" connector and terminator or cable still attached to the cable. Detaching the cable from the "T" connector causes a break in the network.
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Assigning Locally Administered Addresses

This feature enables you to assign the node address for the HP JetDirect print server. This address is then used for all communication with the HP JetDirect print server. To prevent problems, make sure the address you assign is not in use.

Locally administered addresses are supported only with HP JetDirect Token Ring print servers.

1. Verify the printer is on. Verify also that the printer is connected to the network, is online and is not printing a job.
2. Type **SETUP** from the installation directory, then press **Enter**, or select **HP Network Printer Setup** from the group that contains the **SETUP** utility.

The *Network Connected Printer Setup* window appears containing a horizontal list of menus, and the network printers currently configured on your server.

3. Select the printer icon representing the network printer whose printer address you want to modify.
4. Select the *Setup* menu.
5. Select **Locally Administered Addressing**. The *Locally Administered Address* window appears.
6. Type the new locally administered address in the *New Card Address* box.

It is recommended that this address be a 12-digit number in the range of 4000 0000 0000 to 4000 7999 9999.

7. Select **Modify** at the bottom of the window. An information box tells you when the modification is complete.

The printer takes from one to two minutes to configure the locally administered address. During this time, the printer disconnects, reconfigures its address, then reconnects.

8. To continue, select **OK**.
9. To exit the **SETUP** utility, select **Exit** on the *Setup* menu.



Resetting to the Factory Default Address

The HP JetDirect print server address can be reset on an HP LaserJet printer that has an internal print server card. Resetting the printer resets ALL printer settings to their factory defaults. After resetting the printer, you may need to reconfigure the printer's control panel for the user's required settings.

To change back to the factory default address, hold down **On Line** on the printer while you turn the printer off, then back on. For HP LaserJet 4Si printers you might have to turn the printer off and back on one more time to reset the print server back to the factory default.

After resetting the address, make sure you reset your configuration on your host computer.

Viewing the Error Log

1. Type **SETUP** from the installation directory, then press **Enter** or select **HP Network Printer Setup** from the group that contains the **SETUP** utility.
If you are already running **SETUP**, an information box appears. Select **OK** to exit the second version of **SETUP** and continue.
2. If the *Welcome* window appears, select **OK**.
The *Network Connected Printer Setup* window appears. A horizontal list of menus and network printers currently configured for your server are displayed.
3. Select the **Log** menu.
4. Select **View** to display the error log on the window. Each line in the error log corresponds to a separate error message.
5. To exit, select **OK** at the bottom of the *View Status Log* window.
6. To clear or erase the error log, select **Clear** at the bottom of the window.
7. If you want a copy of the error log, select **Save As** on the *Log* menu. You will be prompted for a filename.
8. Select the *Setup* menu.
9. To exit the **SETUP** utility, select **Exit**.

Understanding the Error Log

The error log is divided into five columns:

- The name of the printer the message refers to.
- The date the error or status occurred.
- The time the error or status occurred.
- The error number. Errors are listed by number in the following table.
- A brief description of the error/status. (Listed at the end of the description is the secondary error number. This number is used by the Customer Support Center staff to troubleshoot errors.)

Table 5-1 lists the errors by numbers along with a brief description of each error.

Table 5-1: Error Log Messages	
Error Number	Description
0100	Corrupt data was found in the system profile file (OS2.INI). Run the INSTALL utility to reinstall the HP JetAdmin software.
0200	The server does not have enough memory. Reboot the server. If that fails, add memory to the server.
0300	The server is unable to create a thread. You have too many processes running. Reboot the server or edit the CONFIG.SYS file to increase the "THREADS=value." Then reboot the server.
0400	<ul style="list-style-type: none">• If this is the first time you have tried to add a printer to your network, you do not have the DLC (Data Link Control, IEEE 802.2 protocol) loaded. You may need to edit the CONFIG.SYS file to add more threads.• If you have successfully added a printer, check the CONFIG.SYS file to make sure that the line containing the HPREDIR.EXE command is after the net drivers command lines. (Hewlett-Packard suggests putting the command line last in your CONFIG.SYS file.) Then reboot the server. If that does not work, check to see that the other drivers are loading correctly. If HPREDIR was running, the server's network adapter interface may have reported a problem to HPREDIR.EXE that was not recoverable. Restart HPREDIR. If you still have problems, call for service.
0401	SAP error. The HPREDIR.EXE program could not open a SAP. Reboot to get DLC to reload.
0402	You do not have enough SAPs or Link Stations to run the HP JetAdmin software. Increase the number of SAPs in your network configuration (for more information see your network operating system documentation). Then reboot the server and retry the INSTALL utility. HPREDIR uses one SAP and 18 Link Stations.
0403	Receive error. Reboot the server.
0404	Transmit error. Reboot the server.
0405	Connect error. The printer is offline, turned off, connected to another server (check the server address on the self-test page or configuration plot), or a network problem exists.
0406	Link station error. The HPREDIR.EXE program could not open the link station. Make sure that there are 18 unused Link Stations available before starting HPREDIR .
0407	Disrupted route error. The server cannot find the printer on the network. Make sure the printer is turned on. There may be a cabling, bridge, or, for Token Ring print servers, a jumper block problem.
0408	DLC transport not found error. The DLC is not present on the server. For information on loading the DLC see your network operating system documentation.
0409	Printer connection was lost. A network or printer problem exists. Make sure the printer is on and online. Check the cables, any bridges, and the server.
0500	Maximum configuration exceeded. Delete the printer configuration.
0501	Unknown Error. An internal error in the redirector was detected.
0600	Insufficient handles available. See your network operating system documentation for information on increasing the "MAXOPENS" parameter.

HP Support for IBM OS/2 LAN Server Networks (OS/2 Warp 3 and Above)

Introduction

This chapter provides instructions for installing and configuring Hewlett-Packard's JetAdmin software version A.01 or later for IBM OS/2 LAN Server networks. The HP JetAdmin software described in this chapter consists of the following components:

- HP Remote Control Panel - provides remote access to the control panel on HP printers.
- HP Network Port Settings - the port driver for HP JetDirect solutions.

For information about obtaining software for this product, see the section "Installing HP JetAdmin software for OS/2" later in this chapter or see Chapter 1.

Network Administration Features

The HP Network Port Settings let you:

- Configure printer ports on the server.
- Access windows for assigning locally administered addressing.
- Filter or sort the printer list.
- Enter a printer description.

HP Remote Control Panel is automatically installed during the OS/2 installation. The HP Remote Control Panel lets you:

- View printer status.
- Select printer default settings.
- Enable or disable HP JetDirect print server protocols.
- Set refresh rates for printer status messages.

Software Requirements

The HP JetAdmin software supports IBM OS/2 Warp version 3 and above with IBM LAN Server version 3.x or 4.x.

The IEEE 802.2 protocol must be installed and selected in the IBM LAN Server LAN Adapter and Protocol Support (LAPS). For installation information, see your network operating system documentation.

Installing HP JetAdmin for OS/2

The disk labeled "IBM LAN Server 3.x/4.x for OS/2 Warp Systems—HP JetAdmin Printer Administration Utilities" is available from both Hewlett-Packard and IBM. For installation, follow the instructions that come with the software.

- On IBM LAN Server 3.x networks, install the software on the server.
- On IBM LAN Server 4.x networks, install the software on the client or the server.

NOTE

If you are installing the software from the CD-ROM that came with your HP JetDirect print server or printer, use the instructions included with the CD-ROM or in the getting started guide for your printer.

From Hewlett-Packard, you can download the software to your computer from the HP Forum (GO HPPER) on CompuServe, access the software from HP Distribution at (970) 339-7009 (U.S.A. only), or download the software from the Internet on HP's anonymous FTP site at ftp.hp.com. (login: anonymous).

From IBM, see the "IBM Network PrinterPak for Hewlett-Packard." This is available from IBM (BBS 1-919-517-0001 or Service at (407) 994-5544).

How Installing HP JetAdmin Affects Your Network

The installation process performs the following functions:

- Disables the spooler.
- Copies program files to OS2\DLL on the boot drive.
- Copies program files to OS2\HELP on the boot drive.
- Adds entries to OS2SYS.INI for program locations.
- Enables the spooler.

The OS2SYS.INI entries are initially put into a temporary location. When the system is rebooted, the permanent entries are made.

NOTE

Accessing Printer Status

When you run the SETUP utility, the main window, *Network Connected Printer Setup*, contains icons representing the printers you have connected to your server. Under each icon is the name of the printer and its status.

To perform an immediate refresh of the printer's status, select the *Refresh* menu from the *Network Connected Printer Setup* window, then select *Now*.

The status is updated at a set interval. The default update time is 60 seconds. You can change this interval by selecting *Interval* in the *Refresh* menu.

Status Message	Description
Not responding	The printer does not respond to a connection request from the HPREDIR.EXE program.
Off line	The printer is offline. Press Ctrl-Jms or On on the printer to put the printer back online.
Out of paper	The printer is out of paper. Fill the paper tray(s) according to the instructions in the printer documentation.
Pending	The server is waiting for a status request response from the printer. Wait a minute or so to see if the status is updated. If this message does not change see the troubleshooting chapter for more information.
Printing	The printer is receiving data and is printing that data.
Ready	The printer is ready to receive data.
See error log	A network error occurred. Check the status listed on the error log. See the section "Understanding the Error Log" for more information on the error message. Once the network error is cleared, this message disappears when the next print job is sent to the printer.

Removing Printers from LAN Server or LAN Manager Networks

1. Type **SETUP** from the installation directory, then press **Enter** or select **HP Network Printer Setup** from the group that contains the **SETUP** Utility.
2. If the *Welcome* window appears, select **OK**. The *Network Connected Printer Setup* window appears containing a horizontal list of menus and the network printers currently on your server.
3. Select the printer icon which has the name of the printer to be removed below it. (You must highlight the icon.)
4. Select the *Setup* menu.
5. Select **Delete**. A question box appears to verify you want the printer configuration removed.
6. Select **Yes** or press **Enter** to remove the printer's configuration. A question box might appear if the queue configured for the printer has no more destinations. To cancel the removal of the printer's configuration, select **No**.
7. Select **Yes** or **No** (depending upon the queue's configuration) if the question box appears. An information box informs you that the printer's configuration has been successfully removed.
8. Select **OK** to return to the *Network Connected Printer Setup* window. The printer icon which had the removed printer's name below it should no longer appear on the window.
9. To delete additional printers, repeat steps 3 through 8.
10. When you are finished, select **Exit** on the *Setup* menu, then turn off the printer.
11. Disconnect the network cable from the back of the printer.

CAUTION

If you are using thin Ethernet coaxial cable, disconnect the Ethernet cable from the print server with the BNC "T" connector and terminator or cable still attached to the cable. Detaching the cable from the "T" connector causes a break in the network.



Configuring a Printer Port on the Server

Before you configure the HP JetAdmin software, make sure the following tasks have been performed:

- HP JetAdmin for OS/2 has been installed.
- The HP JetDirect print server is installed in the printer.
- The printer is connected to the network.
- The printer is turned on and is online.
- You have a printer configuration page (also called the self-test page or configuration plot).
- A print object has been created.

1. Using the right mouse button, click the printer icon.
2. Click Settings. The *Port Settings* window appears.
3. Click the **Output Port** tab, then using the right mouse button, click the icon for the HP network port you want.
4. Click Settings. The *HP Network Port Settings* appear.
5. Click the **Printers** tab and select the printer address in the list of available printers.

The address of the HP JetDirect print server is listed on the configuration page (also called the self-test page or configuration plot).

6. When the address appears in the *Selected Address* box, click **Replace**. The address appears in the *Configured Address* box.

If the print server address listed on your configuration page (also called self-test page or configuration plot) does not appear as a choice, the HP JetDirect print server is not communicating with the server that has the port installed. If you have not printed a configuration page from your printer, see the hardware installation guide for your print server or your printer's getting started guide for instructions. See the troubleshooting chapter for information on checking your print server. You cannot proceed with the installation until the correct print server address appears as a choice in the window.

Verifying the Configuration

To verify that you have configured the printer correctly, copy an appropriate file from the server to the printer. (For PCL, use an ASCII file; for PostScript, use a PostScript file; for HP DesignJet plotters, use an HP-GL/2 file).

- If you are at the server, drag and drop a print file to the print object. Make sure to select an appropriate file for your printer language (PCL, PostScript, or HP-GL/2).
- If you are using the command line, send a print file (such as the CONFIG.SYS file) to a PCL printer:

1. Type: `NET SHARE queueName /pr`

QueueName is the Physical Name in the print objects settings view page.

2. Type: `NET USE deviceName \\serverName\queueName`

DeviceName can be LPT1, LPT2, up to LPT9 and must not be in use. *ServerName* is the name given to your server when the network software was installed.

QueueName is the name used in step 1.

3. Type `PRINT /d: deviceName filename`

You can make the sharenames permanent by using aliases (for more information see your network operating system documentation). You should also verify that users have access rights to the queue.

Assigning Locally Administered Addresses

This feature enables you to assign the node address for the HP JetDirect print server. This address is then used for all communication with the HP JetDirect print server. To prevent problems, make sure the address you assign is not in use.

Locally administered addresses are only supported with HP JetDirect Token Ring print servers.

1. Verify the printer is on, online, and not printing a job.
2. Using the right mouse button, click the printer icon.
3. Click **Settings**. The *Printer Settings* window appears.
4. Click the **Output Port** tab, then using the right mouse button, click the HP network port icon for the printer whose address you want to change.
5. Click **Settings**. The *HP Network Port Settings* appears.
6. Click the **Port Options** tab, then click the **Locally Administered Addressing** icon on the lower, center portion of the window. The *Locally Administered Addressing* window appears.
7. Type the new locally administered address in the *New card address* box. It is recommended that this address be a 12-digit number in the range of 4000 0000 0000 to 7FFF FFFF FFFF.
8. Click **Modify** at the bottom of the window. An information box informs you when the modification is complete.

The printer takes from one to two minutes to configure the locally administered address. During this time the printer disconnects, reconfigures its address, then reconnects.



Resetting to the Factory Address

The HP JetDirect print server address can be reset on an HP LaserJet printer that has an internal print server card. Resetting the printer resets ALL printer settings to their factory defaults. After resetting the printer, you may need to reconfigure the printer's control panel for the user's required settings.

To change back to the factory default address, hold down **Ctrl-Like** on the printer while you turn the printer off, then back on. For HP LaserJet 4Si printers, you might have to turn the printer off and back on one more time to reset the print server back to the factory default.

After resetting the address, make sure you reset your configuration on your host computer.

Accessing the HP Network Port Settings

The HP Network Port Settings let you configure printer ports on the server, access windows for assigning locally administered addressing, filter or sort the printer list, type a printer description, and more.

1. Using the right mouse button, click the icon for your printer.
2. Click Settings, then click the Output Port tab.
3. Using the right mouse button, click the icon for the HP network port you want, then click Settings. The *HP Network Port Settings* appear.
4. Click the tab for the function you want.

For a complete listing of the tasks and features available, click **Help** on the appropriate page or window.

Accessing the HP Remote Control Panel

The HP Remote Control Panel is automatically installed during the OS/2 installation. The HP Remote Control Panel lets you view printer status, select printer default settings, enable or disable HP JetDirect print server protocols, set refresh rates for printer status messages, and more.

1. Using the right mouse button, click the icon for your printer.
2. Click the arrow to the right of Printer Panel, then click HP Printer.
3. Click the tab for the function you want.

For a complete listing of the tasks and features available, click **Help** on the appropriate page or window.

Removing Printer Ports from LAN Server Networks

1. Using the right mouse button, click the printer icon.
2. Click Settings, then click the Output Port tab.
3. Using the right mouse button, click the printer port you want to delete.
4. Click Delete, then click Delete again. (To cancel the removal of the printer's configuration, select No.)

NOTE You cannot delete the port if it is still selected by the print object.

5. To delete additional printers, repeat steps 3 and 4.
6. When you are finished, select Exit.

7. Turn off the printer and disconnect the network cable from the printer. If you are using Thin Ethernet coaxial cable, disconnect the Ethernet cable from the print server with the BNC "T" connector and terminator or cable still attached to the cable. Detaching the cable from the "T" connector causes a break in the network.

CAUTION



HP Support for Microsoft Windows for Workgroups

Introduction

This chapter provides instructions for configuring Hewlett-Packard's software on Microsoft Windows for Workgroups networks. The HP software for Windows for Workgroups (MONITOR) can be installed on any 386 or later workstation running Windows for Workgroups. This software enables you to print over the DLC protocol to printers connected to the network by HP JetDirect print servers.

Selecting a Mode

The software may be used in peer-to-peer mode or in client-server mode.

Peer-to-Peer

With Peer-to-Peer mode, each user who wants access to the network printer installs the software on their workstation. Each user then adds the network printer to their system, as described later, and uses the printer as if it was their own. With this solution, you also get printer status.

This solution is best if there are few users and print jobs tend to be short. This solution is the easiest, but runs the risk of jobs being rejected (the print spooler times out) if the printer is heavily used.

Client-Server

In a Client-Server network, one user installs the software and adds the printer to their system. Other users connect to the printer through the first user's system using Print Manager. These users can send their jobs to the first user's system using NETBEUI, IPX/SPX, or TCP/IP, but the first user's system must use the DLC protocol to send the jobs the rest of the way to the printer. The client-server solution provides a way of maintaining queue ordering and job priority. Use this solution if large jobs are printed and several people are connected to the printer.

This solution has some disadvantages:

- The reliability of the workstation chosen to be the print server must be high.
- The workstation must be capable of handling the print traffic that may move through it.
- Printer status is not returned to the client. When using the client-server solution, other users may still install the MONITOR software to print directly to the printer and receive printer status.

Installing the Software from Disks

NOTE

If you are installing the software from CD-ROM, use the instructions in the booklet included with the CD-ROM.

1. Insert the "Windows for Workgroups—Setup and Monitor Utilities" disk into your floppy disk drive A:
2. In Windows, bring up Program Manager and select Run from Program Manager's *File* menu.
3. Type A:\SETUP and click OK or press **Enter**. The *Welcome* window appears.
4. Select Continue or press **Enter**. The *Setup Destination* window appears.
5. To change the default destination, select Set Location, then select Install.

After all of the files are copied, SETUP exits. You must now manually install the DLC network protocol before MONITOR can be used. See the section "Installing the DLC Protocol." The preceding procedures only need to be performed the first time you install MONITOR, unless you remove the utilities and reinstall them.

Installing the DLC Protocol

Currently there are two ways to install the DLC protocol depending on the version of Windows for Workgroups you are running.

- For version 3.1, use the "Network" application that is part of the Microsoft Windows Control Panel to install the DLC protocol.
- For version 3.11, use the "Windows Setup" application located in the main group of Program Manager to install the DLC protocol.

Installing the DLC Protocol on Version 3.1

1. Select **Adapters**. The *Network Adapters* window appears.
2. Click **Setup....** The *Adapters* window appears. Adapters is dependent upon the current adapter being used.
3. Click **Protocols....** The *Protocol Used on Adapter* window appears.
4. Select **Unlisted or Updated Protocol** from the *Available Protocols* box.
5. Click **Add->**. The *Install Driver* window appears.
6. Insert the "Windows for Workgroups—Setup and Monitor Utilities" disk into the floppy drive and type the drive letter, for example A:\.
7. Click **OK**. The *Unlisted or Updated Protocol* window appears and the Microsoft DOS DLC (802.2) entry is highlighted.
8. To exit, click **OK** until you have exited the *Adapters* window.
9. Click **Close** to exit the *Network Adapters* window, then click **OK** to exit the *Network Settings* window.
10. Click **Restart Computer** to have your changes take effect.



Installing the DLC Protocol on Version 3.11

1. Double-click the **Windows Setup** icon. The *Windows Setup* window appears.
2. Pull down the *Options* menu and select **Change Network Settings**. The *Network Setup* window appears.
3. Click **Drivers...** for the *Network Drivers* section. The *Network Drivers* window appears.
4. Click **Add Protocol....** The *Add Network Protocol* window appears.
5. Select **Unlisted or Updated Protocol** from the list and click **OK**. The *Install Driver* window appears.
6. Insert the "Windows for Workgroups—Setup and Monitor Utilities" disk into the floppy drive and type the drive letter, for example A:\.
7. Click **OK**. The *Unlisted or Updated Protocol* window appears and the Microsoft DOS DLC (802.2) entry is highlighted.
8. Click **OK** until you exit the *Network Setup* window, then click **OK** again to acknowledge the changes made to the system.
9. Click **Restart Computer** to have your changes take effect.

Configuring the Printer

Before you configure the HP software, make sure the following tasks have been performed:

- The HP JetDirect print server is installed in the printer.
- The printer is connected to the network.
- The printer is turned on and is online.
- You have a copy of the printer configuration page (also called self-test page or configuration plot). Note the "LAN HW ADDRESS".

If you have not printed a configuration page from your printer, see the hardware installation guide for your print server or your printer's getting started guide for instructions.

To move between the boxes and buttons in the **MONITOR** utility window, press the **Tab** key, or use the mouse to click the box or button.

Adding a Port

1. In Windows, bring up the Control Panel.
2. Double-click the HP Network Port icon.
3. Select the *Port* menu.
4. Select **Add**. The *Add a Network Peripheral Port* window appears.
5. Type a name for the printer port.

The name can be up to eight characters and may only contain letters and numbers. *The first character must be a letter.* For example, to name your printer PRINT1, type PRINT1. The name cannot be a port, such as LPT1, an existing DOS device, or an existing filename.

6. Select the LAN HARDWARE address in the *Card Address* box that corresponds with the 12-digit "LAN HW ADDRESS" listed on your printer configuration page (also called a self-test page or configuration plot).

If the "LAN HW ADDRESS" listed on your configuration page (also called a self-test page or configuration plot) does not appear as a choice, the HP JetDirect print server is not communicating with the server. See the troubleshooting chapter for information on checking your HP JetDirect print server. You cannot proceed with the installation until the correct address appears as a choice on the window.

7. Type a comment in the *Description* box if you wish. You may find it useful to comment on the printer, its location, or its primary users.
8. To change the printer icon, click **Change...** in the *Icon* box, then click **OK** at the bottom of the window. The software now adds the printer configuration to the server. A new printer icon appears on the *HP Network Peripheral Port Monitor* window with the printer's name below it.
 - a. A prompt appears asking if you wish to connect a printer to this port. Select **Yes** or **No**. If you select **Yes**, the *Network Control Panel* application appears, which allows you to connect a printer to the port.
 - b. Continue with the next section, "Connecting the Printer to a Port in Windows."
9. To exit the MONITOR utility, select **Exit** from the *Port* menu.



Connecting the Printer to a Port in Windows

1. Double-click the Control Panel icon. The *Control Panel* window appears.
2. Double-click the HP Network Port icon. The *HP Network Peripheral Port Monitor* window appears.
3. Select the *Port* menu from the *HP Network Peripheral Port Monitor* window.
4. Select **Connect Peripheral to Port...**. The *Network Control Panel* application appears.
5. Select **Add>** and select the type of printer you have from the list.
6. Click **Install...**, then click **Connect...**
7. From the Port list box, select the name of the printer port you added using the MONITOR utility.
8. Click **OK** to close the *Connect* window, then select **Close** to exit the *Printers* window.

You have now completed the configuration of your printer on the Windows for Workgroups server.

Verifying the Configuration

To verify your configuration, use the Windows Write application to print a simple file to the printer.

Changing MONITOR Settings

Changing the Printer Port Icon

1. Double-click the Control Panel icon. The *Control Panel* window appears.
2. Double-click the HP Network Port icon. The *HP Network Peripheral Port Monitor* window appears.
3. Select the icon or port window that has the name of the printer port to be modified from the *HP Network Printer Port Monitor* window. (You must highlight this item).
4. Select the *Port* menu, then select *Modify...* The *Modify a Network Peripheral Port* window appears.

NOTE You can also double-click the *Port* icon, then select *Modify* from the *Toolbar* to change the icon.

5. Click *Change...* from the *Icon* box. The *Change Port Icon* window appears.

6. Scroll through the selection of icons, highlight the new icon, then click **OK** to select the icon.

7. To exit the *Modify a Network Peripheral Port* window, click **OK**.
8. To exit the *MONITOR* utility, select *Exit* from the *Port* menu.

Setting the Status Interval

1. Double-click the Control Panel icon. The *Control Panel* window appears.
2. Double-click the HP Network Port icon. The *HP Network Peripheral Port Monitor* window appears.
3. Select the *Status* menu from the *HP Network Peripheral Port Monitor* window.
4. To immediately update the status, select **Now**.
5. To set the time interval for updating the status, select *Interval*, then type the new interval in seconds. To set the interval to the factory default of 20 seconds, click **Default**.
6. Click **OK**, then select *Exit* from the *Port* menu to exit the *HP Network Peripheral Port Monitor* window.

Using the System or Port Log

You may view, print, save, or clear either the system log which contains information on all the connected ports, or the port log which contains information on the selected printer port.

Displaying the System or Port Log

1. Select the *Log* menu.
2. Select *System Log* if you want to save the error log for all of the printer ports, or select *Port Log* if you want to save the error log for only the selected port.
3. Select *Display....* The *Display System Log* or *Port Log* window appears.
4. Scroll through the list of errors. Double-click an error to receive more information.
5. To erase the system log, click **Clear**.
6. When you are finished, select *Exit* from the *Port* menu to exit the *HP Network Peripheral Port Monitor* window.

Printing the System or Port Log

1. Select the *Log* menu.
2. Select **System Log** if you want to print the error log for all the printer ports, or select **Port Log** if you want to print the error log for only the selected port. To print the port log, select the icon or port window whose error log you wish to view from the *HP Network Peripheral Port Monitor* window.
3. Select **Print...**. The *Print System Log* or *Print Port Log* window appears.
4. Select the print quality and type the number of copies to be made.
5. If the copies are to be collated, check the box in front of *Collate Copies*.
6. Click **OK** to print the error log.
7. Select **Exit** from the *Port* menu to exit the *HP Network Peripheral Port Monitor* window.

Saving the System or Port Log

1. Select the *Log* menu.
2. Select **System Log** if you want to save the error log for all of the printer ports, or select **Port Log** if you want to save the error log for only the selected port. To save the port log, select the icon or port window whose error log you wish to view from the *HP Network Peripheral Port Monitor* window.
3. Select **Save...**. The *Save System Log* or *Save Port Log* window appears.
4. Type the file name, then select the type of file extension you wish to use from *Save File as Type*.
5. Specify the drive and directory to which you want the file saved.
6. Click **OK** to save the error log.
7. Select **Exit** from the *Port* menu to exit the *HP Network Peripheral Port Monitor* window.



Disabling the System Log

1. Select the *Log* menu.
2. Select **Disable Logging**.

Removing Printers from Windows for Workgroups Networks

The first step in removing a printer from the network is to delete the printer configuration at the server. *The printer must not be servicing a job when you do this.*

1. In **Windows**, bring up the **Control Panel** main window and double-click the **HP Network Port** icon.
2. Select the icon or port window which has the name of the printer port to be removed from the *HP Network Printer Port Monitor* window. (You must highlight this icon.)
3. Select the *Port* menu, then select **Delete...**. A question box appears to verify that you want to remove the printer configuration.
4. Select **OK** or press **Enter** to remove the printer's configuration.
An information box informs you of the successful removal of the printer's configuration from the server. The icon which had the removed printer's name beneath it no longer appears on the window. To cancel removal of the printer's configuration from the network, select **Cancel**.
5. To delete additional printers, repeat steps 2 through 4.
6. Select **Exit** from the *Port* menu to exit the **MONITOR** utility.
7. Turn off the printer.
8. Disconnect the network cable from the back of the printer.

CAUTION

If you are using Thin Ethernet coaxial cable, disconnect the Ethernet cable from the print server with the BNC "T" connector and terminator or cable still attached to the cable. Detaching the cable from the "T" connector causes a break in the network.

HP Support for Microsoft Windows NT Networks (version 4.0)

Introduction

Hewlett-Packard's JetAdmin software version 2.3 or later is an administrative tool used to install, configure, and manage printers connected to a network using an HP JetDirect print server. HP JetAdmin software operates as a Microsoft Windows NT application.

HP JetAdmin has three components to install for Windows NT 4.0. Each of the following components are discussed in this chapter:

- HP JetAdmin software
- HP JetDirect Port
- HP Desktop Status

The following capabilities are available through the HP JetAdmin software:

Network Administration Features

- Set up a new print server and printer.
- Change an existing printer configuration.
- Select which printers are shown in the printer list.
- Choose the order in which the printers are displayed in the printer list.
- Install and assign Windows printer drivers to a network printer.
- For Token Ring, select locally administered addressing.
- For TCP/IP, select the IP address, default gateway, and subnet mask.
- Verify printer status and capabilities.
- Remotely select printer default settings including media type, number of copies, page orientation, printer resolution, Resolution Enhancement (REt), print density, and more.
- Control printer error handling including PostScript Jam Recovery, Clearable Warnings, and Auto Continue.
- Lock out the printer control panel or enable password protection.
- View network diagnostic information.
- Reset the HP JetDirect print server.
- Create shared printers on the server.

End User Features

- View and delete your own print jobs.
- Print using the "drag-and-drop" technique.
- View printer and print server status.

For more information about a procedure or window in the HP JetAdmin software, click **Help** while the window is at the front of the display.

Software and Memory Requirements

Supported Servers

- Windows NT 4.0 with TCP/IP, IPX/SPX

If you do not have Windows NT 4.0, you need to obtain it before continuing.

Client Printing Support

- Windows 95
- Windows NT (all versions)
- Windows for Workgroups
- OS/2

Server Disk Space Required

- 4 Mbytes of disk space

Supported HP Desktop Status

- Windows NT 4.0 with TCP/IP, IPX/SPX
- Windows 95 TCP/IP, IPX/SPX

HP JetAdmin Support

- Windows NT 4.0 with TCP/IP, IPX/SPX

Installing the HP JetAdmin Software

If you are installing the HP JetAdmin software using your printer disks, see the getting started guide for your printer for installation instructions.

How Installing HP JetAdmin Software Affects Your Network

The installation process performs the following functions:

- Copies program files to the %SYSTEMROOT%\SYSTEM32 directory.

Installing the HP JetDirect Port on Windows NT 4.0

The HP JetDirect Port allows network administrators to connect a port to a network printer and configure the HP JetDirect print server for that printer. After assigning an HP JetDirect Port to a printer on a server, assign the printer one or more drivers and a share name. Users can then add remote printers to their Printers folders and specify the share name of the printer on the server.

1. Insert disk 1 of the "HP JetAdmin for Windows NT Printer Administration Utilities" disks into your floppy drive A.
2. Double-click **My Computer**, then double-click **Printers**.
3. Double-click **Add Printer**.
4. Click **My Computer**, then click **Next**.
5. Click **Add Port**.
6. Click **Have Disk** and select the path for **HPPORT.INF**.
7. Click the **HP JetDirect Port**, then click **OK** to complete the installation.

Once installed, the HP JetDirect Ports can be created by using the Add Printer wizard.



Installing HP JetAdmin on Windows NT 4.0

HP JetAdmin software is a standalone application that allows administrators to configure, manage, and monitor printers on the network. Using HP JetAdmin software, you can configure the HP JetDirect print server; however, to create a port, you must use HP JetDirect Port (see "Installing the HP JetDirect Port on Windows NT 4.0" above).

1. Insert disk 1 of the "HP JetAdmin for Windows NT Printer Administration Utilities" disks into your floppy drive A.
2. Using the right mouse button, click **Network Neighborhood** in Windows NT, then click **Properties**.
3. Click **Add**.
4. Click **Service**, then click **Add** again.
5. Click **Have Disk**, then select the path for **HPJETNT.INF**.
6. Click **HP JetAdmin**, then click **OK** to complete the installation. Once installed, the HP JetAdmin icon appears in the Windows NT Control Panel.

Installing HP Desktop Status

HP Desktop Status provides printer information to users and administrators who are printing using HP JetDirect Ports. Printer information includes printer status, capabilities, and diagnostic information about the HP JetDirect print server. HP Desktop Status is accessed through a Taskbar icon that is automatically added to the desktop when a new printer that uses HP JetDirect Port is added to the Printers folder. The HP Desktop Status icons change color (green, yellow, red) to represent the printer's current status, and administrators can get extended status information or modify settings by clicking the printer icon in the Taskbar.

1. Insert disk 1 of the "HP JetAdmin for Windows NT Printer Administration Utilities" disks into your floppy drive A.
2. Using the right mouse button, click **Network Neighborhood** in Windows NT, then click **Properties**.
3. Click **Add**.
4. Click **Service**, then click **Add** again.
5. Click **Have Disk**, then select the path for **HPJETNT.INF**.
6. Click **HP Desktop Status**, then click **OK** to complete the installation.

Configuring a New Port and Device on a Windows NT Server

1. Double-click My Computer, then double-click Printers.
2. Double-click Add Printer.
3. Click My Computer, then click Next.
4. Click Add Port, then click Next.
5. Click the HP JetDirect Port, then click OK. The Add HP JetDirect Port Wizard appears.
6. Select the device you want, then click Next.

NOTE

If you want to specify the device rather than choose one from the list, click Specify a hardware address. TCP/IP address, or name, then press Next.

NOTE

If the device has already been configured, click Finish, then go to step 14.

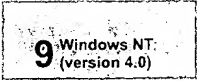
NOTE

If your system is using IPX/SPX, you are asked to enter the IPX/SPX configuration information. For systems not using IPX/SPX, skip to step 10.

8. Type the IPX/SPX configuration information.

- Click Operating Mode and select the appropriate operating mode for the printer (Queue Server Mode for best performance or Remote Printer Mode. If you choose Remote Printer Mode, select the Novell Print Server and type the Printer Number).
- Click Bindery Queues and select the Bindery Queues Services.
- Click NetWare Directory Services and select the NDS Tree Name and Print Server Context.

9. Click the TCP/IP tab or Next.



10. Specify an IP address, then click Next.

- Type the IP Address
- Type the Default Gateway
- Type the Subnet Mask
- If you want to change the idle timeout value, click the Wait this long between jobs box and type the value (in seconds)

11. If desired, click Password, then click the Enable configuration password box. If you do not want to enable a configuration password, go to step 13.

12. If a password is not currently specified, click the New Password box and type a password of up to 12 characters. The password can be any combination of characters on your keyboard.

If you are changing the current password, click the Current Password box and type the current password, then click the New Password box and type a new password of up to 12 characters. The password can be any combination of characters.

NOTE

After you enable a configuration password, you are asked to type the password when you attempt to configure devices in the future. If you do not type the correct password, access is denied. Once the correct password is typed, you are not asked for the password again until you exit the software and re-enter it.

13. Click Finish.

14. The list of ports is displayed, and the port you just added is selected and checked. If the port is not checked, click the desired port to check it. Other ports can be selected if desired.

15. Click Next.

16. Select HP in the Manufacturers column, then select the appropriate printer model in the Printers column.

17. Click Next.

18. Type the name of the printer.

19. Click Yes if you want Windows-based programs to use this printer as the default printer, then click Next.

20. To share the printer with others on your network, type a name in the Share Name box. If you want this printer to support additional platforms, select the appropriate platform names.

21. Click Next.
22. To print a test page and confirm the printer is set up correctly, click Yes.
23. Click Finish to complete the configuration.

The printer can be accessed from the local machine at this time. To access the printer you have just set up from a client, see "Connecting to a Printer from a Client" in this chapter.

Configuring a New Device using HP JetAdmin

Before you configure the HP JetAdmin software, make sure the following tasks have been performed:

- The HP JetDirect print server is installed in the printer.
- The printer is connected to the network.
- The printer is turned on, is online, and you have a configuration page.

If you have not printed a configuration page from your printer, see the hardware installation guide for your print server or your printer's getting started guide for instructions.

If you configure your HP JetDirect print server using HP JetAdmin software, you must create a port using HP JetDirect Port (see "Installing the HP JetDirect Port on a Windows NT Server" earlier in this chapter).

1. Log onto the network as Supervisor or Admin at any user workstation.
2. Double-click the HP JetAdmin icon on your Windows Control Panel.

NOTE

To make printer configuration easier, HP JetAdmin offers Interview Mode, which uses the Next button to guide you through the configuration process. After you become familiar with printer configuration in the HP JetAdmin software, you may want to turn Interview Mode off. Interview Mode is selected as the default when the software is installed.

To select Interview Mode, click Options at the top of the main window, then click Interview Mode.



3. Click Device on the menu bar at the top of the main window, then click New.

4. Select the network address of the HP JetDirect print server attached to the new printer, then click Configure. The address of the HP JetDirect print server is listed on the configuration page (also called the self-test page or configuration plot).

5. Type the new name of the printer. This is the name that appears on the network.

6. Type a general description of the printer (such as the type of printer, options in the printer, and the printer location). This description is optional.

7. Click the NetWare tab or Next.

NOTE

If your system is using IPX/SPX, you are asked to type the IPX/SPX configuration information. For systems not using IPX/SPX, skip to step 11.

8. Type the IPX/SPX configuration information.

- Click Operating Mode and select the appropriate operating mode for the printer (Queue Server Mode for best performance or Remote Printer Mode. If you choose Remote Printer Mode, select the Novell Print Server and type the Printer Number).
- Click Bindery Queues and select the Bindery Queues Services.
- Click NetWare Directory Services and select the NDS Tree Name and Print Server Context.

9. Click the TCP/IP tab or Next. The TCP/IP property page appears.

10. Click Specify IP Configuration, then do the following:

- Type the IP Address
- Type the Default Gateway
- Type the Subnet Mask
- If you want to change the idle timeout value, click the Wait this long between jobs box and type the value (in seconds)

11. Click the Optional tab or Next.

12. If desired, click Password, then click the Enable configuration password box. If you do not want to enable a configuration password, go to step 14.

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13. If a password is not currently specified, click the New Password box and type a password of up to 12 characters. The password can be any combination of characters on your keyboard.

If you are changing the current password, click the Current Password box and type the current password, then click the New Password box and type a new password of up to 12 characters. The password can be any combination of characters.

NOTE

If you are printing from a Macintosh system, click Mac. Type the printer name in the AppleTalk Name box. Type the service that is broadcast on the network for the selected device in the Broadcast as box.

14. Click Finish to complete the configuration.

This completes the configuration of the HP JetDirect print server. To verify that the configuration is working properly, see "Verifying the Printer and Port Configuration" later in this chapter.



Connecting to a Printer from a Client

Once a printer has been created, connected to a network port, and given a share name, other clients on the network can access the printer. On a network client, do the following:

1. Double-click My Computer, then double-click Printers.
2. Double-click Add Printer.
3. Click Network Printer Server, then click Next.
4. Select the server that is sharing the printer, then click OK.
5. Click Finish.

The printer is added to the Printers folder on the client and can be used on the client machine. If necessary, drivers are installed on the workstation that is going to use the shared device.

Accessing HP Desktop Status

There are several ways to get the status of a printer on the network: through the HP JetAdmin software, by opening a printer or viewing printer properties in the Printers folder, and by using printer icon in the Taskbar. The icon and printer Properties methods are only available if the HP Desktop Status component is installed.

The icon gives a simple overview of printer status by displaying a small printer icon in the Taskbar. The icon is green if the printer is ready, yellow if there is a warning condition (such as toner low), or red if there is an error condition (such as the printer is out of paper).

You can also access Summary and Properties information by right-clicking on the desired printer and selecting the appropriate menu item. Note that tool tips are also implemented. (If you move the cursor over a tray icon and leave it there for a few seconds, the name of the printer pops up.)

Status, capabilities, and diagnostic information is available by right-clicking the printer in the Printer folder, then clicking Properties.

Verifying the Printer and Port Configuration

1. Double-click **My Computer**.
2. Double-click the **Printers**.
3. Select the printer that you want to verify.
4. Using the right mouse button, click the printer, then click **Properties**.
5. Select **Test Page** to send a test page to the printer.

A sheet with information valuable to users on your network should print, telling you that your printer and port are configured properly. If the test page does not print, see the troubleshooting chapter.

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Removing Printers and Ports from Windows NT Networks

Deleting a printer on the server does not delete the port (or ports) servicing that printer. To delete a port on a server, follow the steps below.

Deleting a Port

1. Double-click **My Computer**.
2. Double-click **Printers**, then select any printer.
3. Using the right mouse button, click the printer, then click **Properties**.
4. Click the **Ports** page. Select the port you want to delete in the list of ports. Make sure that no printers in the **Printers** folder are using the port you want to delete.
5. Click **Delete Port**.

Deleting a Printer

1. Double-click **My Computer**.
2. Double-click **Printers**.
3. Select the printer that you want to remove.
4. Using the right mouse button, click the printer, then click **Delete**.
5. Restart the printer.

Installation on a SunOS Host

NOTE

If you are installing from CD-ROM, see the booklet that came with the CD-ROM.

Use the `extract_unbundled` command to load the HP JetAdmin software installation script and files from QIC tape to your SunOS host. "Extract_unbundled" runs the installation script (`hnpinstall`) to set up the file structures required for print server and spooler configuration. Proceed as follows:

1. Log on to the SunOS host computer as a superuser.
2. To load the HP JetAdmin software from the tape, type:

```
/usr/etc/extract_unbundled
```

The following prompt appears:

```
Enter media drive location [local | remote]:
```

3. If the tape drive is directly attached to the host, type `local`. If it is attached to another host, type `remote`. If you are using a remote drive, you are also prompted for the name of the remote host to which the drive is connected.

The following prompt appears:

```
Enter Device Name (e.g. rst0, rmt0, rfd0c) : /dev/r
```

4. Type the remainder of the device name you are using (the prompt supplies the initial `r`).

5. Insert the cartridge into the tape drive and press **Return**.

A copyright message is displayed along with a product description. Then the following prompt appears:

```
Do you want to continue [y/n]?
```

6. Type "y" to continue. Typing "n" ends the installation without loading the files.

The software begins loading. When the loading is completed, the following prompt appears:

```
Install/De-install JetAdmin Utility
```

- 1) Install JetAdmin
- 2) Remove JetAdmin

Please Make a Selection (quit=q)

7. Your response depends on your intended configuration:

- If you plan to load this software to other hosts, type `q` to exit. Copy `sun_41.car.2` and `/usr/bin/hnpinstall` to the other hosts. Stop any previous version of the HP JetAdmin software that may be running.

Run the installation script on each host intended to be a spooler or the BOOTP server. To start the script, type the following:

```
/usr/bin/hnpinstall
```

- If this software is only used on this host, answer `1`. This automatically starts the installation process.

If `/usr/bin/hnpinstall` is not executable, make it executable by typing the following:

```
chmod a+x /usr/bin/hnpinstall
```

8. After some processing, the following message appears:

```
Installation is Complete
```

9. This signifies that software installation is complete. Now go to the section "Running the HP JetAdmin software" in this chapter.

NOTE

The current copy of the HP JetAdmin software can be removed by using `hnpinstall /usr/bin/hnpinstall`.

10. Press **Ctrl** to start the loading process.

11. If you are ready to load, press "y" again and the software begins to load.

Upon completion, the update program is exited. Examine the "/tmp/update.log" file for any problems that may have occurred.

Now go to the section "Running the HP JetAdmin software" in this chapter.

Installation on an HP-UX 10.0 Host (from DAT)

1. Log on to the host computer as a superuser and type the following command: `/usr/sbin/swinstall`
2. Depending on your system, you have one of the following options:
 - If the *Specify Source* window appears, go to step 4.
 - If a message appears indicating that there is no depot on the local host, click OK, then go to step 4.
 - If the *Target Selection* window appears, highlight the target, then select Mark for Install under the *Actions* menu option. Go to step 3.
3. Select Show Software for Selection under the *Actions* menu option.
4. In the *Specify Source* window, set the "Source Depot Path" to the path for the DAT drive. For example:
`/dev/rmt/0m`

5. Select OK to close the *Specify Source* window.
6. In the *Software Selection* window, highlight Hewlett-Packard JetAdmin for UNIX, then select Mark for Install under the *Actions* menu.
7. Under the *Actions* menu in the *Software Selection* window, select Install (analysis).
8. After the analysis is complete and successful, click OK to start the installation process.
9. After the installation is complete, check the log file for possible errors, then exit swinstall.

Now go to the section "Running the HP JetAdmin software" in this chapter.

Installation on a Solaris Host

NOTE
If you have a previously installed version (C.02.16 and before), kill the current running copy of the daemon "hpnpd" and use pkgrm HPNP to remove it.

1. Log on to the system as a superuser.
2. Copy the updated software file to the /tmp directory.
3. At the command line, type:
`pkgadd -d <filename> all`
4. If you are asked if Motif is installed, type "y" (yes) or "n" (no).
5. When prompted for where you want HPNP installed on the system:
 - Press **Enter** to use the default selection "/opt/opt/hpnp"
 - Or enter a different directory.

NOTE
You must modify /etc/inetd.conf to reflect the new location of bootpd (the default location is /opt/hpnp/bin).

6. When you are asked if you want to install conflicting files, type "y" (yes).
7. When you are asked if you want to continue, type "y" (yes).

Now go to the section "Running the HP JetAdmin software" in this chapter.

Running the HP JetAdmin Software

The HP JetAdmin software helps the administrator to configure the print server and the spooling system. To run the HP JetAdmin software from the default paths, type the following. If you installed HP JetAdmin in a different directory, the paths be different.

For HP-UX 9.x and SunOS 4.1.3 and 4.1.4, type:

```
/usr/lib/hpnp/jetadmin
```

For HP-UX 10.x and Solaris 2.x, type:

```
/opt/hpnp/bin/jetadmin
```

To use HP JetAdmin software in a UNIX based TCP/IP environment, you must first configure the HP JetDirect print server and configure the host spooler.

Configuring the HP JetDirect Print Server

Configuring the HP JetDirect print server mainly consists of assigning an Internet Protocol (IP) address to the print server. This IP address is used to represent the printer that is connected to the print server.

To operate properly, the HP JetDirect print server must be configured with network configuration data, such as a valid IP address. Depending on your printer and system, this can be done in the following ways:

- By downloading the data from a network-based server using BOOTP (Bootstrap Protocol) and TFTP (Trivial File Transfer Protocol) each time the printer is turned on. Note that the BOOTP daemon, bootpd, must be running on a BOOTP server that is accessible by the printer.
- By a network-based server using RARP (Reverse Address Resolution Protocol) answering the print server's RARP request and supplying the print server with the IP address. The RARP method only allows you to configure the IP address.
- By setting configuration parameters using Telnet. In order to set configuration parameters, set up a Telnet connection from your UNIX system to the HP JetDirect print server using the default IP address. The default IP address takes effect five minutes after the printer is turned on (if none of the other configuration methods is successful). The default IP address is 192.0.0.192. If Telnet is used, the print server saves the configuration even if the printer or print server is turned off.
- By manually typing the configuration data using the printer control panel keys. The control panel method allows you to configure only a limited subset of configuration parameters (IP address, subnet mask, default gateway address, and idle timeout). Therefore, control panel configuration is recommended only during troubleshooting or for simple installations. If control panel configuration is used, the print server saves the configuration over power cycles.
- By using Dynamic Host Configuration Protocol (DHCP). This protocol is supported in HP-UX 10.10 system and Solaris 2.4 system. For more information, see the bootpd man page. A sample DHCP configuration file (dhcpd.conf) is located in the /etc directory on HP-UX 10.10 systems.

Since HP-UX presently does not provide dynamic name services for its DHCP implementations, HP recommends that you set all print server lease durations to "infinite." This ensures that print server IP addresses remain static until such time as dynamic name services are provided.

Using BOOTP/TFTP

This section describes how to configure the print server using BOOTP.

Systems that use Network Information Services (NIS)

If your system uses NIS, you may need to rebuild the NIS map with the BOOTP service (as shown below) before performing the BOOTP configuration steps. To rebuild the NIS map for Solaris, see your Solaris system documentation.

1. To rebuild the NIS services map for SunOS, first go to the correct directory by typing: `cd /var/yp`
2. Rebuild the map by typing: `make services`
3. Verify that the BOOTP service is now present in the map by typing:

```
ypcat services | grep bootp
```
4. There should be an entry for `bootps` and `bootpd` displayed. To determine the process ID (PID) for `inetd` (internet services daemon), type:

```
ps -ef | grep inetd (HP-UX and Solaris)
ps -ax | grep inetd (SUN OS only)
```
5. Use the PID to signal `inetd` to re-read its configuration file:

```
kill -1 <inetd-PID>
```

where `1` is the number "one" and `<inetd-PID>` is the PID for `inetd`.

Configuring software using BOOTP/TFTP

For the HP JetDirect print server to obtain its configuration data over the network, the BOOTP server must be set up with the appropriate configuration files. The HP JetAdmin software automatically creates or edits these files. To set up the configuration files on the BOOTP server, run the HP JetAdmin software and perform the following steps:

1. Turn off the printer.
2. Select Configuration from the *Main* menu. The *Configuration* menu appears.
3. Select Create printer configuration in BOOTP/TFTP database.

The software interactively prompts you for BOOTP/TFTP configuration parameters listed in Table 10-1, and automatically makes the necessary entries in the appropriate files. Some parameters are optional.

The data that you configure determines which entries and files are created. Some data is intended for the `/etc/bootptab` file, while other data is placed in a Network Printer Interface (NPI) configuration file.

BOOTP is used by the print server to obtain entries in the `/etc/bootptab` file, while TFTP is used to obtain additional configuration information from a configuration file. If you do not specify any SNMP configuration entries, and default values are used for the host access list and idle timeout, an NPI configuration file is not created.

HP recommends that the BOOTP server be located on the same subnet as the printers it serves. BOOTP broadcast packets may not be forwarded by routers unless they are properly configured.

You can interactively configure the Simple Network Management Protocol (SNMP) parameters. SNMP configuration parameters are listed in Table 10-1, and are optional.

CAUTION

Community names (passwords) for your printer are not secure. If you specify community names for your printer, select names that are different from passwords used for other systems on your network.

To receive SNMP traps, the systems listed on the SNMP trap destination list must have a trap daemon to listen to those traps. The HP JetAdmin software does not provide such a daemon.

6. Before the software shuts down the spooler to make configuration changes, it prompts you for confirmation. Press **Return** for the HP JetAdmin software to shut down the spooler.

7. At the prompt, press **Return** to display the configuration menu.

The printer should now be configured in your HP-UX, SunOS, or Solaris spooling system.

Modifying the Existing Network Print Queue from the Local Spooler

You can modify the existing network spool queue using the HP JetAdmin software.

1. Run the HP JetAdmin software.

- For HP-UX 9.x and SunOS 4.1.3 and 4.1.4, type:

`/usr/lib/hpnp/jetadmin`

- For HP-UX 10.x and Solaris 2.x, type:

`/opt/hpnp/bin/jetadmin`

2. Select Configuration from the software's main menu. The *Configuration* menu appears.

3. Select Modify existing spooler queue(s) from the software's *Configuration* menu.

4. Type the name of the queue you want to modify.

5. When the HP JetAdmin software displays a list of configurable parameters, change the parameters you want to change, then select 0 (zero).

In the Solaris environment, do not use Print Manager to modify any queue created by the HP JetAdmin software. Using Print Manager makes all network queues configured by the HP JetAdmin software unusable.

CAUTION

10 HP-UX, SunOS, and Solaris

Deleting a Network Print Queue from the Local Spooler

If necessary, you can delete an existing network spool queue using the HP JetAdmin software.

1. Log on as a superuser.

2. Run the HP JetAdmin software.

- For HP-UX 9.x and SunOS 4.1.3 and 4.1.4, type:

`/usr/lib/hpnp/jetadmin`

- For HP-UX 10.x and Solaris 2.x, type:

`/opt/hpnp/bin/jetadmin`

3. Select Configuration from the *Main* menu. The *HP JetAdmin for UNIX Configuration* menu appears.

4. Select the option for removing the queue.

5. Type the print queue name, then press **Enter**. If there are jobs in this print queue, this operation is aborted.

Use HP JetAdmin instead of `lpadmin` to remove queues.

CAUTION

Removing Printers from HP-UX, SunOS, and Solaris Networks

The first step in removing a printer from the network is to delete the printer configuration at the server. The printer must not be servicing a job when you do this.

Deleting a Network Print Queue from the Local Spooler

1. Log on as a superuser.
2. Run the HP JetAdmin software.
 - For HP-UX 9.x and SunOS 4.1.3 and 4.1.4, type:
`/usr/lib/hpnp/jetadmin`
 - For HP-UX 10.x and Solaris 2.x, type:
`/opt/hpnp/bin/jetadmin`
3. Select Configuration from the *Main* menu. The *HP JetAdmin for UNIX Configuration* menu appears.
4. Select the option for removing the queue.
5. Type the print queue name, then press **Enter**.
6. Repeat steps 4 and 5 for each queue directed toward this printer.

Once the queues are deleted, the printer is removed from the spooler. Continue only if you want to remove the printer from the BOOTP server. If there are jobs in this print queue, this operation is aborted.

CAUTION Use HP JetAdmin instead of `lpadmin` to remove queues.



Removing the Printer from the BOOTP Server

1. Log on as a superuser.
2. Run the HP JetAdmin software.
 - For HP-UX 9.x and SunOS 4.1.3 and 4.1.4, type:
`/usr/lib/hpnp/jetadmin`
 - For HP-UX 10.x and Solaris 2.x, type:
`/opt/hpnp/bin/jetadmin`
3. Select Configuration from the *Main* menu. The *HP JetAdmin for UNIX Configuration* menu appears.
4. Select the option for removing the printer, which is represented as a BOOTP entry.

NOTE

This removal does not affect the currently running printer. The effect of this operation is that when the printer is power cycled the next time, it will not be able to acquire its IP address from this BOOTP server.

Moving to Another Network

When moving an HP JetDirect print server that has been configured with an IP address to a new network, make sure that the IP address does not conflict with addresses on the new network. You may change the IP address of the print server to one that can be used on the new network, or erase the current IP address and configure another address after you install the print server on the new network.

NOTE

If the current BOOTP server is not reachable, you may need to locate a different BOOTP server and configure the printer to this server.

If the print server was configured using bootp, remove the bootp configuration with the HP JetAdmin software. If the print server was configured with RARP, erase the entry in the /etc/ethers file.

Using Telnet to Erase the Existing IP Address

To erase the IP address during a Telnet session:

1. Type: cold-reset and press **Return**
2. Type: quit and press **Return** to exit Telnet.

When you exit the Telnet session, the IP address is erased.

Running the HP JetPrint Software

The HP JetPrint software simplifies printing for end users on the network. To run the software, type the following:

For HP-UX 9.x, type:

`/usr/lib/hpnp/bin/jetprint`

For HP-UX 10.x and Solaris 2.x, type:

`/opt/hpnp/bin/jetprint`

For SunOS 4.1.3 and 4.1.4, consult the man pages for the HP JetPrint software.

Configuring the HP JetDirect Print Server to Use LPD

Introduction

This chapter describes how to configure the HP JetDirect print server for use with various systems that have the Line Printer Daemon (LPD) installed. These instructions include:

- Configuring BSD-based UNIX systems using LPD
- Configuring print queues using the SAM utility (HP-UX systems).
- Setting up DHCP/WINS on a Windows NT server
- Configuring Windows NT for TCP/IP environments

About LPD

Line Printer Daemon (LPD) refers to the protocol and programs associated with line-printer spooling services that may be installed on various TCP/IP systems.

Some of the widely used systems in which the HP JetDirect print server functionality supports LPD includes:

- Berkeley-based (BSD) UNIX systems
- HP-UX
- SunOS/Solaris
- IBM AIX
- Windows NT

Most of the information in this chapter describes using LPD on UNIX systems. For information on configuring Windows NT environments, turn to "Configuring Windows NT for TCP/IP Environments" in this chapter.

The configuration examples in this section show the syntax for BSD-based UNIX systems. The syntax for your system may vary. See your system documentation for the correct syntax.

NOTE

The LPD functionality can be used with any host implementation of LPD that complies with the RFC 1179 document. The process for configuring printer spoolers, however, may differ. See your system documentation for information on configuring these systems.

The LPD programs and protocol include the following:

Program Name	Purpose of Program
lpr	Queues jobs for printing
lpq	Displays print queues
lprm	Removes jobs from print queues
lpc	Controls print queues
lpd	Scans and prints the files if the specified printer is connected to the system. If the specified printer is connected to another system, this process forwards the files to an lpd process on the remote system where the files are to be printed.

Requirements for Configuring LPD in a UNIX Environment

Before you can use LPD, your printer must be properly connected to the network through the HP JetDirect print server, and you must have print server status information. This information is listed on the printer configuration page (also called a self-test page or configuration plot). If you have not printed a configuration page from your printer, see the hardware installation guide for your print server or your printer's getting started guide for instructions.

You must also have the following:

- An operating system that has LPD installed and running.
- Superuser (root) access to your UNIX system.
- The LAN hardware address (or station address) of the print server. This address is printed on the configuration page (also called a self-test page or configuration plot). It is similar to the following:

Ethernet: LAN HW ADDRESS: 080009xxxxxx
Token Ring: LAN HW ADDRESS: 100050xxxxxx

Configuring LPD for UNIX

To configure the HP JetDirect print server to work with LPD, perform the following steps:

1. Set up an IP (Internet Protocol) address.
2. Set configuration parameters.
3. Set up print queues.
4. Print a test file.

The following sections provide detailed descriptions for each step.

Step 1. Setting Up an IP Address

The HP JetDirect print server must have an IP (Internet Protocol) address in order to be recognized by the network.

You can set the IP address using one of the following methods:

- BOOTP protocol
- RARP protocol
- The printer's control panel
- Telnet (default IP address)
- DHCP (see the section "DHCP Configuration" in this chapter)

Using BOOTP

If you have the Bootstrap Protocol (BOOTP) and Trivial File Transfer Protocol (TFTP) on your system, you can use the BOOTP and TFTP download file to set up the IP address and to set configuration parameters (for more information about configuration parameters, see Table 10-1 or Table 11-1 in this chapter).

After setting the HP JetDirect print server IP address and the configuration parameters for your system using BOOTP and TFTP, continue with "Step 3. Setting Up Print Queues" in this chapter.

Skip this section if you plan to use the printer control panel or Telnet to configure the print server, or if the printer can get its IP address from an existing BOOTP server.

NOTE

For systems that use Network Information Services (NIS), the NIS map may need to be rebuilt with the BOOTP service before performing the following steps (see "Systems that use Network Information Services (NIS)" in Chapter 10). To rebuild the NIS map for Solaris, see your Solaris system documentation.

For the HP JetDirect print server to obtain its configuration data over the network, the BOOTP server must be set up with the appropriate configuration files. The HP JetAdmin software automatically creates or edits these files. To set up the configuration files on the BOOTP server, run the HP JetAdmin software and perform the following steps:

1. Turn off the printer.
2. Select **Configuration** from the *Main* menu. The *Configuration* menu appears.
3. Select **Create printer configuration in BOOTP/TFTP database**.

The software interactively prompts you for BOOTP/TFTP configuration parameters listed in Table 10-1, and automatically makes the necessary entries in the appropriate files. Some parameters are optional.

The data that you configure determines which entries and files are created. Some data is intended for the /etc/bootptab file, while other data is placed in a Network Printer Interface (NPI) configuration file.

BOOTP is used by the print server to obtain entries in the /etc/bootptab file, while TFTP is used to obtain additional configuration information from a configuration file. If you do not specify any SNMP configuration entries, and default values are used for the host access list and idle timeout, an NPI configuration file is not created.

HP recommends that the BOOTP server be located on the same subnet as the printers it serves. BOOTP broadcast packets may not be forwarded by routers unless they are properly configured.

You can interactively configure the Simple Network Management Protocol (SNMP) parameters. SNMP configuration parameters are listed in Table 10-1, and are optional.

CAUTION

Community names (passwords) for your printer are not secure. If you specify community names for your printer, select names that are different from passwords used for other systems on your network.

To receive SNMP traps, the systems listed on the SNMP trap destination list must have a trap daemon to listen to those traps. The HP JetAdmin software does not provide such a daemon.

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4. After creating the BOOTP/TFTP database, the HP JetAdmin software conducts a BOOTP/TFTP self-test, then prompts you to turn on the printer.
5. Turn on the printer. When it receives power, the HP JetDirect print server sends BOOTP requests and should receive its configuration data from the configured BOOTP server.
- The HP JetAdmin software tests if the printer is configured by pinging the IP address.
6. Verify that the printer is correctly configured by typing "Y" for the following prompt:

Do you want to send the test file(s) to this printer
(y/n, default = n)?

Using RARP

This setup procedure enables the Reverse Address Resolution Protocol (RARP) daemon running on your system to respond to a RARP request from the HP JetDirect print server and to supply the IP address to the print server.

The following procedure sets the IP address, not the subnet mask. This restricts printing to a local subnet. If you need to configure additional parameters, use Telnet (see the Telnet section in this chapter).

1. Turn off the printer.
2. Log onto your UNIX system as a superuser.
3. Make sure the RARP daemon is running on your system by typing the following command at the system prompt:

```
ps -ef | grep rarpd (HP-UX and Solaris)
ps -ax | grep rarpd (SUN OS only)
```

The system response should be similar to the following:

```
861 0.00.2 24 72 5 14:03 0:00 rarpd -a
860 0.00.5 36 140 5 14:03 0:00 rarpd -a
```

If the system does not display a process number for the RARP daemon, see the rarpd man page for instructions on starting the RARP daemon.

4. Edit the /etc/hosts file to add your designated IP address and node name for the HP JetDirect print server. For example:

13.32.11.24 laserjet1
5. Edit the /etc/ethers file to add the LAN hardware address/station address (from the configuration page) and the node name for the HP JetDirect print server. For example:

08:00:09:a8:b0:00 laserjet1
6. If your system uses Network Information Services (NIS), you need to incorporate changes to the NIS host and ethers databases.
7. Turn on the printer.
8. To verify that the card is configured with the correct IP address, use the ping utility. At the prompt, type:

```
ping <IP address>
```

If ping does not respond, see the troubleshooting chapter in this manual.

Using the Printer's Control Panel

If you are using an internal print server and your printer has a control panel display, you can set the IP address and configuration parameters at the printer's control panel. For more information, see the hardware installation guide for your print server or the getting started guide for your printer.

After setting the HP JetDirect print server IP address and configuration parameters using the control panel, continue with "Step 3. Setting Up Print Queues."

Step 2. Setting Configuration Parameters

Depending on your system configuration, you may want to set additional parameters, such as the following (all except the IP address are optional parameters):

Table 11-1. Configuration Parameters	
Configuration Parameter	Purpose
IP Address	The Internet Protocol address used for communication between network nodes. <i>This is a required entry.</i>
IP Subnet Mask	The mask used when a network is subnetted. This is required only if subnetting is being used.
Default Gateway	The IP address of the gateway used when sending packets off the local network. Only one default gateway may be configured.
Syslog Server	The IP address of the host that receives syslog messages from the print server. Only one syslog server may be configured. If a syslog server is not configured, the print server does not send syslog messages.
Idle Timeout	The number of seconds that an idle TCP print data connection is allowed to remain open. Since the card supports only a single TCP connection, the idle timeout balances the opportunity of a host to recover or complete a print job against the ability of other hosts to access the printer. The acceptable values range from 0 seconds to 3600 seconds (1 hour). The default is 90 seconds. If "0" is typed, the timeout mechanism is disabled and the TCP connection does not close. This means that no other TCP connection can be made to that host.

In addition, you can set several Simple Network Management Protocol (SNMP) parameters.

Setting Configuration Parameters Using Telnet

To set configuration parameters using Telnet, you must set up a Telnet connection from your TCP/IP system to the HP JetDirect print server.

9. At the system prompt, type:

Telnet <IP address>

where <IP address> may be the assigned address from BOOTP, RARP, DHCP, or the printer control panel, or the default IP address over Telnet.

10. When the server responds connected to IP address, press **Return** twice to make sure that you have initialized the Telnet connection.

11. When you are prompted for a password, type the correct password (for example: kfujs).

By default, Telnet does not require a password, but you can set up to a 14 character password by using the password command (passwd). Once a password is set, password protection is enabled. Subsequently, you can change the password, but you cannot disable password protection unless you perform a cold reset on the printer.

NOTE
Any time during the Telnet session you can type: ? then press **Return** to view available configuration parameters, the correct command format, and a list of additional commands to display or print configuration information that you have typed.

12. At the Telnet prompt ">" type:

parameter: value

then press **Return** where parameter refers to the configuration parameter you are defining, and value refers to the definitions you are assigning to that parameter. Each parameter entry is followed by a carriage return. See Table 10-1 for information about the configuration parameters.

13. Repeat step 4 to set any additional configuration parameters.

14. When you have finished typing the configuration parameters, type: quit then press **Return** to end the Telnet session. Using quit to end the session activates the configuration parameters.

To exit without activating parameters, type exit and press **Return**.

Telnet Configuration Parameter Examples

The following examples show how configuration parameters might be typed.

IP Address Parameter Example

```
ip: 13.32.11.24
```

where `ip` identifies the parameter and `13.32.11.24` specifies the address for the printer. By typing this parameter, you can overwrite the IP address used to make the Telnet connection with one you have selected.

Subnet Mask Example

```
subnet-mask: 255.255.255.0
```

where `subnet-mask` identifies the parameter and `255.255.255.0` specifies the subnet mask.

Default Gateway Example

```
default-gw: 13.32.11.85
```

where `default-gw` identifies the parameter and `13.32.11.85` specifies the IP address of the gateway.

Syslog Server Example

```
syslog-server: 13.32.11.85
```

where `syslog-server` identifies the parameter and `13.32.11.85` specifies the IP address of that server.

Idle Timeout Parameter Example

```
idle-timeout: 120
```

where `idle-timeout` identifies the parameter and `120` specifies the number of seconds an idle print data connection is allowed to remain open. If you set this parameter to `0`, the connection does not terminate and no other host is able to make a connection.

LPD Banner Page Parameter Example

```
banner: 0
```

where `banner` identifies the parameter and `0` disables the banner page print out. Substitute `1` for `0` to enable the banner page print out.



Set Community Name Example

```
set-cmnty-name: my_network
```

where `set-cmnty-name` identifies the parameter and `my_network` specifies the name you want to set.

The Set Community Name parameter is a network management security mechanism that enables external network management entities to set internal print server management (mib) values. The name can be from 1 to 32 alpha and numeric characters and can include the minus (-) and underscore (_) symbols.

DHCP Configuration

Dynamic Host Configuration Protocol (DHCP) is one of several auto configuration mechanisms that the HP JetDirect print server uses. If you have a DHCP server on your network, the HP JetDirect print server automatically obtains its IP address from that server and registers its name with any RFC 1001 and 1002-compliant dynamic name services.

If you do not want your HP JetDirect print server configured via DHCP, you must disable DHCP configuration.

When you disable a DHCP configuration via Telnet, the print server automatically releases any names and IP addresses associated with the DHCP server and re-initializes the TCP/IP protocol for the print server. At this point, the print server is unconfigured and begins to send bootp and rarp requests to acquire new (non-DHCP) configuration information.

If you manually provide an IP address when disabling DHCP via Telnet, the print server still releases its DHCP-provided IP address but does not send bootp and rarp configuration requests. Instead, it uses the configuration information you have provided. Therefore, if you provide the IP address you should also manually set all of the configuration parameters, such as subnet mask, default gateway, and idle timeout.

NOTE

If the DHCP configuration state is changed from disabled to enabled, the print server assumes it should acquire its configuration information from a DHCP server. This means that when the Telnet session is completed, the TCP/IP protocol for the print server is re-initialized and all current configuration information is deleted. The print server then attempts to acquire new configuration information by sending DHCP requests on the network to a DHCP server.

DHCP Parameter Example

```
dhcp-config: 1
```

where `dhcp-config`: identifies the Dynamic Host Configuration Protocol and 1 indicates that this protocol is enabled. This is the default setting. To disable DHCP, type: `dhcp-config: 0`

```
name: <alphanumeric>
```

to assign or change a name.

Step 3. Setting Up Print Queues

You must set up a print queue for each printer or printer personality (PCL, PostScript) you use on your system. Also, different queues are required for formatted and unformatted files. The `rp` queue names `text` and `raw` in the following examples have special meaning. The line printer daemon on the HP JetDirect print server treats data in the `text` queue as unformatted text or ASCII, and adds a carriage return to each line before sending it to the printer. The line printer daemon treats data in the `raw` queue as formatted files in PCL, PostScript, or HP-GL/2 and sends the data without change to the printer.

Configuring Print Queues for BSD-based Systems

1. Edit the `/etc/printcap` file to include the following entries:

```
printer_name|short_printer_name: \
:lp=: \
:rm=node_name: \
:rp=remote_printer_name_argument: \ (this should be text
or : raw)
:lf=/usr/spool/lpd/error_log_filename: \
:sd=/usr/spool/lpd/printer_name:
```

where `printer_name` identifies the printer to the user, `node_name` identifies the printer on the network, and `remote_printer_name_argument` is the print queue designation.

For more information on `printcap` see the `printcap` man page.

Example 1 (suggested name for an ASCII or text printer):

```
ljl_text|text1: \
:lp=: \
:rm=laserjet1: \
:rp=text: \
:lf=/usr/spool/lpd/ljl_text.log: \
:sd=/usr/spool/lpd/ljl_text:
```

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Example 2 (suggested name for PostScript, PCL, or HP-GL/2 printers):

```
ljl_raw|raw1: \
:lp=: \
:rm=laserjet1: \
:rp=raw: \
:lf=/usr/spool/lpd/ljl_raw.log: \
:sd=/usr/spool/lpd/ljl_raw:
```

If your printer does not support automatic language switching, use the printer's control panel (if the printer has one) to select the printer language or rely on the application to select the printer language via commands embedded in the print data.

Make sure your users know the printer names for the printers, since they must type those names on the command line for printing.

2. Create the spooling directory by making the following entries. At the root directory, type:

```
mkdir /usr/spool/lpd
cd /usr/spool/lpd
mkdir printer_name_1 printer_name_2
chown daemon printer_name_1 printer_name_2
chmod g+w printer_name_1 printer_name_2
```

where `printer_name_1` and `printer_name_2` refer to the printers to be spooled. You may spool several printers. The following example shows the command to create the spooling directories for printers used for text (or ASCII) printing and for PCL or PostScript printing.

Example:

```
mkdir /usr/spool/lpd
cd /usr/spool/lpd
mkdir ljl_text ljl_raw
chown daemon ljl_text ljl_raw
chmod g+w ljl_text ljl_raw
```

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Configuring Print Queues Using SAM (HP-UX systems)

On HP-UX systems you can use the SAM utility to configure remote print queues for printing "text" (ASCII) files or "raw" (PCL, PostScript, or other printer language) files.

Before you execute the SAM program, select an IP address for the HP JetDirect print server and set up an entry for it in the `/etc/hosts` file on your system running HP-UX.

1. Start the SAM utility as a superuser.
2. Select Peripheral Devices from the main menu.
3. Select Printers/Plotters from the *Peripheral Devices* menu.
4. Select Printers/Plotters from the *Printers/Plotters* menu.
5. Select Add a Remote Printer from the *Actions* list, then select a printer name.

Examples: `my_printer` or `printer1`

6. Select a remote system name.

Example: `jetdirect1` (node name of the HP JetDirect print server)

7. Select a remote printer name.

Type text for ASCII or raw for PostScript, PCL, or HP-GL/2)

8. Check for a remote printer on a BSD system. You must type "y".

9. Click OK at the bottom of the menu. If the configuration is successful, the program prints the message:

The printer has been added and is ready to accept print requests.

10. Click OK and select Exit from the *List* menu.

11. Select Exit Sam.

Step 4. Printing a Test File

To verify that the printer and print server connections are correct, print a test file.

1. At the system prompt type:

```
lpr -Pprinter_name file_name
```

where `printer_name` is the designated printer and `file_name` refers to the file to be printed.

Examples (for BSD-based systems):

```
Text File:      lpr -Ptext1 textfile
PCL File:       lpr -Praw1 pclfile.pcl
PostScript File: lpr -Praw1 psfile.ps
HP-GL/2 File:   lpr -Praw1 hpglfile.hpg
```

For HP-UX systems, substitute `lp -d` for `lpr -P`.

2. To get print status, type the following at the prompt:

```
lpq -Pprinter_name
```

where `printer_name` is the designated printer.

Examples (for BSD-based systems):

```
lpq -Ptext1
lpq -Praw1
```

For HP-UX systems, substitute `lpstat` for `lpq -P` to get print status.

This completes the process for configuring the HP JetDirect print server to use LPD. If you encounter problems, see "Troubleshooting an LPD Configuration" in Chapter 12.

Moving to Another Network

When moving an HP JetDirect print server that is configured with an IP address to a new network, make sure that the IP address does not conflict with addresses on the new network. You may change the IP address of the print server to one that can be used on the new network, or erase the current IP address and configure another address after you are installed on the new network.

If the current bootp server is not reachable, you may need to locate a different bootp server and configure the printer to this server.

If the print server was configured using bootp, remove the bootp configuration with the HP JetAdmin software. If the print server was configured with RARP, erase the entry in the `/etc/ethers` file.

If the IP address was set from the front panel or with Telnet, use the procedure below.

Using Telnet to Erase the Existing IP Address

To erase the IP address during a Telnet session:

1. Type: cold-reset and press **Return**.
2. Type: quit and press **Return** to exit Telnet.

When you exit the Telnet session, the IP address is erased.

NOTE

Changing the IP address is covered in "Step 2. Setting Configuration Parameters" in this chapter.



Configuring Windows NT for TCP/IP Environments

This section describes how to configure Windows NT 3.5 networks to use LPD (Line Printer Daemon).

The process consists of four parts:

- Installing TCP/IP software on the NT server (if not already installed).
- Setting up DHCP (Dynamic Host Configuration Protocol) on a Windows NT server.
- Installing TCP/IP software on the NT client (if not already installed).
- Configuring a network printer for Windows NT clients.

Installing TCP/IP Software

This procedure lets you check whether you have TCP/IP installed on your Windows NT server and client, and to install the software if necessary.

If you need to install the software on your Windows NT client, first complete the server installation and the section "Setting Up DHCP on a Windows NT Server."

1. To check whether you have Microsoft TCP/IP Printing protocol and TCP/IP printing support, double-click Control Panel, then double-click the Network option to display the *Network Settings* dialog box.

If TCP/IP Protocol and Microsoft TCP/IP are listed under *Installed Network Software*, you have already installed the necessary software. Proceed to "Setting Up DHCP on a Windows NT Server."

2. If you have not previously installed the software, select **Add Software**.
3. Select **TCP/IP Protocol** and related components. If you are installing software on the server, also click **DHCP Server Service**.

4. Select **Continue**.

5. Check the **TCP/IP Network Printing Support** option, then select **OK**.

When prompted, type the full path to the Windows NT distribution files.

6. In the *Network Settings* dialog box select **OK**. The *TCP/IP Configuration* dialog box appears.



7. If you are configuring a Windows NT server, type the IP address, default gateway address, and subnet mask in the appropriate spaces.
If you are configuring an NT client, check with your System Administrator to learn whether you should check the *Enable Automatic DHCP Configuration* box or whether you should type a static IP address, default gateway address, and subnet mask in the appropriate spaces.
8. Click OK to exit *Network Settings*.
9. Exit Windows and restart your computer for the changes to take effect.

Setting Up DHCP on a Windows NT Server

The section describes how to set up a pool of IP addresses that the NT server can assign to any requester. The HP JetDirect print server makes a request to the DHCP server when the printer is turned on. No additional print server configuration is necessary. To set up DHCP, perform the following steps.

1. At the Windows NT server, open the Program Manager window and double-click the Network Administrator icon.
2. Double-click the DHCP Manager icon to open this window.
3. Select Server and select Server Add.
4. Type the server IP address, then click OK to return to the DHCP Manager window.
5. In the list of DHCP servers, click on the server you have just added, then select Scope and select Create.
6. Select Set up the IP Address Pool. In the *IP Address Pool* section, set up the IP address range by typing the beginning IP address in the *Start Address* box and the ending IP address in the *End Address* box. Also type the subnet mask for the subnet to which the IP address pool applies.

The starting and ending IP addresses define the end points of the address pool assigned to this scope.

NOTE A DHCP "Scope" is an administrative group of DHCP Clients on a specified subnet for which you define shared parameters. If desired, you can exclude ranges of IP addresses within a "scope."

7. In the *Lease Duration* section, select Unlimited, then select OK.
Hewlett-Packard recommends that all printers be assigned infinite leases to avoid problems resulting from IP addresses that change. Be aware, however, that selecting an unlimited lease duration for the scope causes all clients in that scope to have infinite leases.
If you want clients on your network to have finite leases, you can set the duration to a finite time, but you should configure all printers as reserved clients for the scope.
 8. Skip this step if you have assigned unlimited leases in the previous step. Otherwise, select Scope and select Add Reservations to set up your printers as reserved clients. For each printer, perform the following steps in the *Add Reserved Clients* window to set up a reservation for that printer:
 - a. Type the selected IP address.
 - b. Obtain the MAC address or hardware address from the configuration page, and type this address in the *Unique Identifier* box.
 - c. Type the client name (any name is acceptable).
 - d. Select Add to add the reserved client.
To delete a reservation, in the *DHCP Manager* window, select Scope and select Active Leases. In the *Active Leases* window, click on the reservation you want to delete and select Delete.
 9. Select Close to return to the *DHCP Manager* window.
 10. Skip this step if you are not planning to use dynamic naming services (WINS). Otherwise perform the following steps when configuring your DHCP server:
 - a. From the *DHCP Manager* window, select DHCP Options and select one of the following:
Scope - if you want Name Services only for the selected scope.
Global - if you want Name Services for all scopes.
 - b. Add the server to the *Active Options* list. From the DHCP Options window, select WINS/NBNS Servers (044) from the *Unused Options* list. Select Add; then select OK.
- A warning may appear requesting that you set the node type. You do this in step 10d.

11 Configuring LPD

c. You must now provide the IP address of the WINS server by doing the following:

- Select **Value**, then **Edit Array**.
- From the *IP Address Array Editor*, select **Remove** to delete any undesired addresses previously set. Then type in the IP address of the WINS server and select **Add**.
- Once the address appears in the list of IP addresses, select **OK**. This returns you to the *DHCP Options* window.

If the address you have just added appears in the list of IP addresses (near the bottom of the window) continue to step 10d. Otherwise, repeat step 10c.

d. In the *DHCP Options* window, select **WINS/NBT Node Type (046)** from the *Unused Options* list. Select **Add** to add the node type to the *Active Options* list. In the *Byte* box, type 0x4 to indicate a mixed node, and select **OK**.

11. Click **Close** to exit to **Program Manager**.

Ensuring TCP/IP Software is Installed on Windows NT Clients

If you are uncertain whether the TCP/IP software has been installed on the Windows NT client, turn to the section "Installing TCP/IP Software" and follow the steps to check for TCP/IP software installation.

To install TCP/IP on the Windows NT client, you must have an IP address for the client, or the client must be a DHCP client.

Configuring a Network Printer for Windows NT Clients

At each Windows NT client, set up the default printer by performing the following steps.

1. From the **Program Manager** window, double-click the **Main** icon, then double-click **Control Panel** icon, then double-click the **Printers** icon.
2. From **Print Manager**, select **Printer**, **Create Printer** to display the *Create Printer* dialog box.
3. In the *Printer name* box, type a name. The name may have up to 32 characters.
4. From the *Printer Driver* list, select the appropriate printer driver.
5. In the **Print To** box, select **Other** to display the *Print Destinations* dialog box.
6. Select **LPR Port**, then select **OK** to display the *Add LPR Compatible Printer* dialog box.
7. In the *Name or Address of Host Providing LPD* box, type the IP address or name of the print server.
8. In the *Name of Printer on That Machine* box, type the name in lower case.
 - If you are using a print server, type (in lower case) the name: **raw** or **text**.

The HP JetDirect print server treats "text" files as unformatted text or ASCII files. Files that are "raw" are formatted files in PCL, PostScript, or HP-GL/2 printer languages.

9. Select **OK** to save the changes.

11 Configuring LPD

Verifying the Configuration

From within Windows NT, print a file from any application. If the file prints correctly, the configuration was successful.

If the print job is not successful, try printing directly from DOS using the following syntax:

```
lpr -S<ipaddress> -P<queueName> filename
```

where *ipaddress* or *name* is the IP address of the print server, *queueName* is the name "raw" or "text" (see "Configuring a Network Printer for Windows NT Clients" in this chapter), and *filename* is the file you wish to print.

If the file prints correctly, the configuration was successful. If the file does not print, or prints incorrectly, see the troubleshooting chapter in this manual.

Troubleshooting the HP JetDirect Print Server

Overview

This chapter describes how to diagnose and correct problems associated with the HP JetDirect print server.

The chapter is divided into two sections.

Section 1 lists common questions customers have asked about installing and configuring HP JetDirect print servers. Look here first. If this section doesn't answer your question, go to section 2.

Section 2 provides a general approach to troubleshooting. A troubleshooting flowchart directs you to specific areas to check. The flowchart provides an overview of the procedures to follow to troubleshoot the HP JetDirect print server. Problems are divided into four main areas:

- Printer problems.
- HP JetDirect hardware installation and connection problems.
- HP JetAdmin software installation and configuration problems.
- Network related problems.

To troubleshoot your HP JetDirect print server, you may need the following items:

- Your printer's user's guide.
- Your printer's getting started guide
- The hardware and software installation manuals for your print server
- The diagnostics tools and utilities provided with your network software (such as the PCONSOLE or NWADMIN utility provided with Novell NetWare software, or the ping command provided with UNIX systems).

Section 1. HP JetDirect Frequently Asked Questions

General Questions

1. The HP JetDirect Print Servers do not have an AUI print server, and I need to connect to fiber optic or thick coaxial cable. What can I do?

You can connect a 10Base-T to AUI converter to the 10Base-T port of the HP JetDirect print server. One available converter is the UTP/AUI converter made by NUDATA (NUDATA part # 5529, phone # 908-842-5757, fax # 908-842-1161). Then you can attach the appropriate transceiver or AUI cable to the converter.

2. When resolving an HP JetDirect issue, should I update to the latest version of the HP JetAdmin software?

Yes. Running the latest version of the HP JetAdmin software lets you take advantage of the most current features, performance improvements, and defect fixes.

3. I installed my HP JetDirect print server on the network, but it does not appear in HP JetAdmin, PCONFIG, or the SETUP program. What should I do?

When HP JetDirect print server does not show up on the network, there are three typical causes (other causes are possible):

- topology problem
- cable problem
- faulty HP JetDirect print server

Testing for these typical causes follows a process of elimination as shown below.

- To test whether the problem is related to your topology, simplify the topology between the printer and the file server. Locate the printer so that print jobs do not have to go through bridges, routers, or concentrators, and see whether the problem goes away. If simplifying the topology eliminates the problem, then the problem probably lies in the topology and not in the HP JetDirect print server. In this case, check with your network administrator for assistance in understanding and correcting this problem.

- To test whether the problem is related to cabling, try the following one at a time:

- Attach the printer to a different port of the hub or MAU.
- Replace cables with cables known to be good.
- Connect the print server to a network connection being used by a working HP JetDirect print server, PC, or workstation.
- If using thin Ethernet cabling, try known good T-connectors and 50-ohm terminators.

4. What is the replacement part number for the HP JetDirect print server bracket for the upper MIO slot on the HP LaserJet 4Si?

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5. Are simultaneous RJ-45 and BNC connections supported on the J2552A HP JetDirect print server?

No, only one port works at a time.

6. Do HP JetDirect print servers work with ARCNET?

No, HP JetDirect print servers support Ethernet/IEEE 802.3 and Token Ring/IEEE 802.5.

Novell NetWare Questions

1. I can't get HP JetPrint to change the printer driver assigned to an existing queue. What should I do?

To be able to select a different driver for an existing queue in HP JetPrint you need to do the following:

- Install more than one printer driver for the queue in HP JetAdmin. If only one driver is installed in HP JetAdmin, HP JetPrint assumes that you do not want to change it.
- In HP JetPrint, under Preferences, check the box "Prompt when choosing printer driver for queue."
- In HP JetPrint, select a different queue as default. Then go back to the original queue and set it as default. If more than one driver was installed for that queue in HP JetAdmin, HP JetPrint prompts to select a new driver. The list of choices show all drivers installed for the queue in HP JetAdmin.



2. When I try to run HP JetAdmin I get an error that says I don't have the NetWare shell loaded. What causes this?

Check to make sure you have the correct IPX and NetWare shell versions. HP JetAdmin requires IPX v3.10 or above and NETX v3.26 or above. The IPXODI.COM version should be v1.20 or above.

3. I'm installing HP JetAdmin but I'm getting the message that there's not enough memory.

You need to have 500K of available memory to install HP JetAdmin.

4. I am configuring my HP JetDirect print server for Remote Printer Mode with HP JetAdmin. I see only "Printer 0" in the Printer Number field of HP JetAdmin, even though I have configured another printer number under the print server with PCONSOLE. What causes this?

Check to be sure you have the correct IPX and NetWare shell versions. HP JetAdmin requires IPX v3.10 or above, and NETX v3.26 or above. The IPXODI.COM version should be v1.20 or above. Also, restart the Pserver on the server.

5. I keep losing the connections to my HP JetDirect print servers on my Novell NetWare network. Sometimes I get 18 or 1B errors on my configuration page when this disconnect occurs. What is wrong?

On networks that are particularly busy or where there are several "hops" across routers, you may run into situations where the HP JetDirect print server loses its connection to the file server. Other symptoms may include the 18 or 1B "Printer Number In Use" error on the configuration page.

To resolve this, first enable AutoContinue on the printer. Then, if you are using Novell's FSERVER.NLM, try unloading and reloading it. If this doesn't solve the problem, you may want to adjust the SPX timers.

You increase two timers on the Novell file server console: SPX watchdog abort timeout (in ticks) default=540 and SPX default retry count (in ticks) default=10.

SPXCONFIG.NLM controls the standard defaults for the SPX communication on the network. The file server uses SPX packets to communicate with the workstations or with print servers such as our HP JetDirect print servers. Increasing these parameters increases the time the file server allows for communication from the HP JetDirect print server.

Microsoft LAN Manager/IBM LAN Server Questions Using HPREDIR

1. I am getting a SYS or LAN error 3175 on my file server that is sometimes accompanied by a server lockup. What can I do?

Run HPREDIR as a detached process by removing the following line from CONFIG.SYS: `RUN C:\HPNETPRN\HPREDIR.EXE`

Then insert the following line in the STARTUP.CMD file:
`DETACH C:\HPNETPRN\HPREDIR.EXE`

This procedure is recommended any time the LAN Server (or LAN Manager) locks up the file server when you are adding queues or configuring the HP JetDirect print server. For other hints, check the Readme file that comes with the software.

2. I get a SYS 3175 error when installing the LAN Manager/LAN Server. Installation and setup utilities for my HP JetDirect print server. What causes this?

This always occurs if you have a file named CONFIG.BAK on the root of the C drive prior to installing the HP JetAdmin software. The problem occurs because the HP software tries to overwrite this file, subsequently generating the sys3175 error.

To correct this situation, go out to the OS/2 prompt and rename the CONFIG.BAK to some other name. Once this is done, the program should install normally.

3. What APARs should I get from IBM to make my HP JetDirect print server run optimally with IBM LAN Server?

IBM has two APARs that might be helpful.

- JR06399 (LANDDD.OS2) which repairs problems in LAN Server's DLC stack. The symptoms associated with this APAR are disconnects and other situations that look like communication problems. The documentation for this APAR suggests incorrectly that it is only for LAN Server v2.0. It actually applies to LAN Server v3.0 installations as well.
- PJ08196 (PMGRE.DLL) which repairs a problem with the OS/2 Presentation Manager graphics engine driver. The symptoms associated with this APAR are that the desk top hangs when changing something associated with the network-connected printer, like adding a printer. This APAR applies for customers using OS/2 2.0 with the service pack.

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4. I get a blank page after each print job I send from my Microsoft LAN Manager/IBM LAN Server file server to my networked HP LaserJet printer. What do I need to do to change this?

Make sure you are not using a NULL OS/2 printer driver. HP LaserJet OS/2 printer drivers do not send a final formfeed character at the end of the print job.

If a NULL driver is the only driver available, be sure that "Enable FP" is not selected in the printer driver setup.

5. How do I determine the HPREDIR version?

Here are four ways:

- Look on the original floppy disk for a Revision number.
- Open the setup program and check the first screen for the version number.
- Run the installation program from the floppy disk or from the installation on the hard disk drive and check the first screen for the version number.
- Choose "Help" and "About" in the setup program.

6. When I try to run the INSTALL program, I get an error that says there is something wrong with my config.sys file and that I should reinstall my network software. What should I do?

OS/2 is installed on the D: drive or a lower drive than D:. The OS/2 configuration files are searched for on the C: drive only. You need to install the HPREDIR program on file servers that have OS/2 installed on the C: drive. Or, if you need to have OS/2 on the D: drive, copy the following files from the root of the D: drive to the root of the C: drive:

- config.sys
- os2.ini
- os2sys.ini

After these files are copied to the C: drive, HPREDIR should run successfully. If any of the three files mentioned above on the D: drive change, you need to manually change the corresponding files on the C: drive so the files on the C: and D: drives match.

HP JetAdmin for OS/2 Questions

1. When I am booting Warp with a network printer offline, a 40 MIO error occurs on the printer. How can I prevent this error from happening?

This error can be prevented by setting Auto Continue to On in the Errors page of the Remote Control Panel or from the actual printer control panel.

2. When I am printing to 20 to 25 ports simultaneously, occasionally I lose data or some jobs print incorrectly. How can I prevent this from happening?

The queue elements per adapter setting in the PROTOCOL.INI file may be too low. Check the PROTOCOL.INI file for the queue elements per adapter setting and increase the number to 1400.

3. When I am installing HP JetAdmin for OS/2, an error occurs saying that the WPHELP.HLP file could not load. Why is that?

The installer needs to update the WPHELP.HLP file, but it cannot be overwritten if it is in use. Close all help files and restart the HP JetAdmin for OS/2 installation from the beginning.

Windows for Workgroups Questions

1. I am getting a message that HPNVPD is not running. Why is that?

If HPNVPD is not running, it is either because the DLC protocol is not loaded or there was a shortage of memory.

- If the DLC protocol is not loading, reinstall it by rerunning the installation program on the Windows for Workgroups Setup and Monitor utilities disk.
- If the PC is running out of memory, decrease the MAXNUMBUF=15 entry found at the bottom of the SYSTEM.INI file by increments of 2 until the number is reduced to 7.
- If the HPNVPD still won't run and the MAXNUMBUF entry has been decreased to 7, try decreasing the MAXPORTS=5 default. This number can't be decreased lower than the number of HP JetDirect connected printers on the network.

2. I am getting the error message: "HPNVPD is not running. Monitor is unable to access status information". I am not able to run the HP Network Ports program, and Windows beeps when it is started up. What can I do?

Check the AUTOEXEC.BAT file. If the line that loads the MSDLC.EXE comes after the NET START line, switch them back to the order shown in the example below:

```
C:\WINDOWS\msdlc.exe
C:\WINDOWS\net start loadhigh
C:\WINDOWS\msipx loadhigh
C:\WINDOWS\netx qecho off
c:\windows\smaridrv.exe
PATH=C:\WINDOWS\EXCEL;C:\WINDOWS\WORD;C:\;C:\DOS;
C:\WINDOWS;q:\toolbook;q:\novabt;q:\sysman31
prompt $ppg
loadhigh doskey
set temp=c:\windows\temp
```

Once you have made the change, reboot and restart Windows. This time Windows should not beep on startup and the HP Network Ports program should run successfully.

3. I can print from Windows for Workgroups to my HP JetDirect print server, but when I go out to a DOS prompt I can no longer print to the print server. What do I need to do?

Printing from a DOS prompt can be accomplished through three steps:

1. Set up the printer with the HP JetDirect print server in a Client-Server mode as you normally would following the instructions in the Windows for Workgroups section of the software installation guides for your print server.
2. Share the printer out on the network through Windows Print Manager. This is a required step to setting up a HP JetDirect print server up in the Client-Server mode. To do this, highlight the queue in Print Manager, select the *Printer* menu, and select *Share printer as...*
3. With Windows for Workgroups still running, go to the DOS prompt. Use the NET.EXE program found in the WINDOWS directory to associate an available LPT port to the shared queue. These are the steps to follow:
 - a. Start a DOS session.
 - b. Run the program C:\WINDOWS\NET.EXE.



c. Press **Alt** + S to display available printer resources.

d. Press **Alt** + B to browse for the name of the computer you selected in step 2 above. Choose the computer's name and wait for the name of the shared printer to appear in the "Shared printer queue" box. Then press **Enter** to return to the NET.EXE opening screen.

e. Press **Alt** + T, then type 1. Press **Enter**.

f. Press **Esc** to exit from NET.EXE.

4. When attempting to open memory-intensive applications in Windows, my PC freezes, reboots, or goes to a black screen. This occurs after loading Microsoft's DLC protocol. What's wrong?

You need more available memory. Run Memmaker or maximize your available conventional memory.

Windows NT Questions for DLC (Windows NT 3.5x)

1. I did not receive a floppy disk from which to install my HP JetDirect print server into Windows NT. What should I do?

All the software needed to configure and run a HP JetDirect print server under Windows NT is included with the Windows NT product. As long as you have a HP JetDirect print server that supports DLC, you are able to configure the card.

2. Can I print with TCP/IP with Windows NT?

Yes, if you have enabled TCP/IP printing services in NT and if you have a firmware version of 3.14 or later on your HP JetDirect print server.

3. Multiple users are trying to print to the HP JetDirect print server, but only one can print successfully while the other users' jobs sit in the print manager. What can I do?

The print queue is set to "Continuous-based" which means when one user has the queue, that user has sole access to the queue until logging off or exceeding the timeout. To change from "Continuous-based" to "Job-based" to allow the queue to open after each job, do the following:

1. Select the printer by clicking on it.
2. From the *Printer* menu, select *Properties*.
3. Click *Settings*.
4. Click *Timers*.

5. Select *Job Based* under the *Connection* heading.

4. I cannot install my HP JetDirect print server following the steps in the Configuration Guide. What can I do?

Here are modified instructions for installing the HP JetAdmin software and configuring the HP JetDirect print server. The instructions for "Removing Ports and Printers from Windows NT Networks" can be found in the current software installation guide for your print server.

To Install the Software:

1. Run Windows NT.
2. Double-click the Control Panel icon.
3. Double-click the Network icon.
4. Click Add Software.
5. Select DLC Protocol and click Continue.
6. Reboot your system.
7. In Control Panel / Network, ensure that the DLC Protocol appears in the *Network Software* box.

To Configure a Printer:

1. Select Print Manager from the Main Group.
2. Choose Create Printer from the *Printer* menu at the top of the screen. The *Create Printer* dialog box is displayed.
3. Type a name for the printer in the *Printer name* field. (This is the default share name if you decide to share the printer in step 9.)
4. Select the printer's model from the *Driver* pull down menu.
5. Select Net Printer from the *Print to* pull down menu. The *Print Destinations* dialog box appears.
6. Choose Hewlett-Packard Network Port from the *Available Print Destinations* list. The *Add an HP Network Peripheral Port* dialog box is displayed.
7. Type a name for the port in the *Name* field (the name must not be the name of an existing port, such as LPT1 or an existing DOS device).

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8. Select the HP JetDirect LAN HARDWARE address from the *Card Address* pull down menu. This address matches the one listed under "LAN HW ADDRESS" on the configuration page (also called a self-test page or configuration plot).
9. Click OK to exit the *Add a Network Peripheral Port* dialog box. You may share the printer if you wish. To share the printer, click *Share the Printer* on the network in the *share* box. The share name defaults to the printer name, and can be changed if needed.
10. Click OK to exit the *Create Printer* dialog box. A dialog box from the selected model's device driver is displayed.
11. Set any printer-specific options, then click OK.

UNIX Questions

1. In Solaris 2.2 or 2.3, only Superuser or Root can print. How can others print?
To correct this problem, download the most recent version of the software. For instructions, see "Software, Driver, and Patch Image Upgrades" in chapter 1 of this guide, or call HP FIRST (Fax Information Retrieval Support Technology) at 1-800-333-1917 (U.S.) or 208-344-4809 (outside the U.S.).

2. In LPD, how do I suppress the burst page?

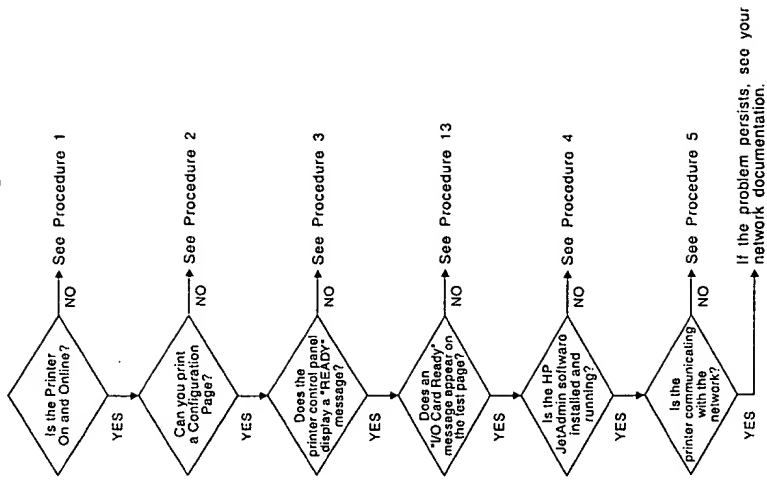
For HP-UX and Solaris, use the `-onb` option in the command line. Type the following: `lp -dprintername -onb filename`

For SunOS, use the `-h` option in the command line. Type the following: `lpr -pprintername -h filename`

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Section 2. General Troubleshooting

Troubleshooting Chart - Assessing the Problem



Procedure 1: Verifying the Printer is On and Online

Check the following items to make sure the printer is ready to print.

1. Is the printer plugged in and turned on?

Make sure the printer is plugged in and turned on. If the problem persists, you may have a defective power cable, power source, or printer.

2. Is the printer online?

The online light should be lit. If it is not, press the appropriate key to place the printer online.

3. Is the printer's control panel display blank (on printers with displays)?

- Make sure the printer is turned on.
- Make sure the HP JetDirect print server is installed correctly.

4. Is the form feed light on (where applicable)?

If the form feed light is on, it may indicate that a Form Feed was not sent with the print data, and that data is waiting for a Form Feed to print. Take the printer offline, press **[Form Feed]**, then put the printer back online.

5. Does a message other than READY appear on the printer control panel display?

- See Procedure 3 in this section for a list of network related error messages and corrective actions.
- See your printer documentation for a complete list of control panel messages and corrective actions.



Procedure 2: Printing a Configuration Page

The configuration page (also called a self-test page or configuration plot) is an important troubleshooting tool. The information on this page reveals the status of your network and the HP JetDirect print server. The ability to print a configuration page provides an indication that the printer is operating correctly. See the end of this chapter for descriptions of the information on the configuration pages.

Check the following items if the configuration page does not print.

1. Did you perform the correct steps on the printer to print the configuration page?

The steps required to print a configuration page vary between different printers. See your printer manual or the hardware installation guide for your print server for specific instructions on how to print a configuration page.

2. Is there a print job in process?

You cannot send a configuration page to the printer while a print job is in process. Wait until the print job is complete, then resend the configuration page.

3. Does an error message appear on the printer control panel display?

- See Procedure 3 in this section for a list of network related error messages and corrective actions.
- See your printer documentation for a complete list of control panel messages and corrective actions.

Procedure 3: Resolving Printer Display Error Messages

Check the following information to resolve network related error messages that appear on the printer control panel display. *This information assumes you have already printed a configuration page.*

1. Does 18 MIO NOT READY or 23 MIO NOT READY appear on the printer display?
 - If you are using thin Ethernet coaxial cable, a cabling problem has been detected. Verify the network cabling, connections, and router configurations.
 - If you are using only the LocalTalk port, 18 MIO NOT READY or 23 MIO NOT READY appears every time you turn on the printer. This message automatically disappears after 3 minutes. To prevent the message from appearing, terminate the BNC Ethernet connection on the HP JetDirect print server by placing a "T" connector and two 50 ohm terminators on the Ethernet connection.
 - If you downloaded Flash images recently, turn off the printer, then turn it back on.
 - Verify that the correct print server name appears next to NODENAME on the configuration page. If not, see the chapter for your network operating system for installation information.

2. Does NOT READY, UPPER MIO, or LOWER MIO appear on the display?
 - Make sure that the print server is connected to the network.
 - See if any error messages appear on the configuration page. See the end of this chapter for descriptions of the information on the configuration pages or Chapter 13 for error message information.

3. Does a 40 ERROR appear on the display?
 - The HP JetDirect print server detected a break in the data communications. When this error occurs, the printer goes offline.

A break in communications may result from the physical network connection being disrupted or the server going down. If your printer has "auto continue" and it is set to "OFF," you must press the appropriate key (**Continue**, for example) on the printer after the communications problem is solved to put the printer back online. Setting auto continue to ON forces the printer to reconnect without user intervention. However, this does not solve the disconnect problem.

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4. Does an initializing (INIT) message appear on the display?

This is a normal message. Wait about 3 minutes for the message to clear, or another message to appear. If another message appears, see the printer manual or the configuration page for additional information.

5. Does an 80 SERVICE message appear on the display?

Turn the printer off, then on again. If the message reappears, reinstall the HP JetDirect print server. If the service message persists try the following procedure:

- a. Turn off the printer
- b. Remove the HP JetDirect print server from the printer.
- c. Turn the printer on again.

If the message persists after you have removed the HP JetDirect print server, the problem may be with the printer. See the printer manual for more information. If the message does not persist, and it was an 80 SERVICE message, the problem is with the HP JetDirect print server and you may need to replace it. See the replacement instructions in your warranty. If the message is different than the messages listed in this section, see the printer manual for more information.

Depending on the type of problem that causes the 80 SERVICE message, the print server may send a diagnostics page to the printer when the error occurs. If you get multiple diagnostics pages for a single failure, forward these pages to your HP authorized dealer for further analysis. If you need to replace the print server, include the diagnostics pages with the old print server.

6. Does a message other than READY or the messages listed in this section appear on the display?

See your printer documentation for a complete list of control panel messages and corrective actions.

Procedure 4: Verifying HP JetAdmin Software Installation and Operation

Check the following items to verify the correct operation of your HP JetAdmin software. *This information assumes you have already printed a configuration page (also called a self-test page or configuration plot).*

1. Can you install the HP JetAdmin software on your workstation?
 - Make sure you are installing the HP software correctly. For more information, see the chapter on your supported network operating system in this manual.
 - Verify that your system meets the memory requirements for the software.
 - Verify that your network operating system and hardware platform are supported by the HP JetAdmin software. For more information, see the section on supported network operating systems in Chapter 1.
 - Reinstall the software following the appropriate directions in this manual for your network operating system.
2. Does the HP JetAdmin software run correctly?
 - Make sure you are logged in with supervisor access.
 - Try running the software from a different workstation to verify the problem is not with your workstation.
 - Make sure your system software and workstation requester software are up to date.
 - Reinstall the software following the appropriate directions in this manual for your network operating system.
 - Verify that the media the HP JetAdmin software came on is not corrupt or damaged.
 - Make sure that any changes made recently on the network were performed correctly.
 - If hardware has been recently moved or added to the network, verify that it was moved, deleted, or installed correctly. See the chapter for your network operating system to verify the connection.
 - If any configuration files have been modified recently, make sure the changes were correct and that the HP JetDirect print server configuration reflects those changes. See the chapter for your network operating system for configuration information.

12 Troubleshooting the Print Server

3. Is the HP JetDirect print server communicating correctly with the HP JetAdmin software?
 - Verify that the correct print server name appears next to NODENAME on the configuration page. If not, see the chapter for your network operating system for installation information.
 - Verify all of the settings on the configuration page. For more information, see the sections on configuration pages at the end of this chapter.
 - Make sure that any changes made recently on the network were performed correctly.
 - If hardware has been recently moved or added to the network, verify that it was moved, deleted, or installed correctly. See the chapter for your network operating system to verify the connection.
 - If any configuration files have been modified recently, make sure the changes were correct and that the HP JetDirect print server configuration reflects those changes. See the chapter for your network operating system for configuration information.
 - See Procedure 5.
4. Is the setting you want to make in the HP JetAdmin software missing or grayed out?
 - The printer or HP JetDirect print server does not support this functionality.
 - You may not be logged in with the appropriate privileges on the network.
5. Once you select the printer address in the HP JetAdmin software, can you configure the printer?

If you cannot, see the troubleshooting section for your network operating system in this chapter.

Procedure 5: Resolving printer communication problems with the network

Check the following items to verify the printer is communicating with the network. *This information assumes you have already printed a configuration page.*

1. Is there any physical connection problems between the workstation or file server and the HP JetDirect print server?

Verify network cabling, connections, and router configurations.

2. Are your network cables connected properly?

Make sure that the printer is attached to the network using the appropriate HP JetDirect print server port and cable. Check each cable connection to make sure it is secure and in the right place. If the problem continues, try a different cable or ports on the hub or main.

3. Is the network terminated correctly?

If you are using a ThinLAN (thin Ethernet coaxial cable), your network must form a line, not a loop. If your printer is the end node, the BNC connector must have a 50-ohm terminator attached to one end.

4. Have any software applications been added to the network?

Make sure they are compatible and that they are installed correctly with the correct printer drivers. See the chapter for your network operating system to verify the connection.

5. Are other users able to print?

The problem may be workstation specific. Check the workstation network drivers, printer drivers, and redirection (capture in Novell NetWare).

6. If other users are able to print, are they using the same network operating system?

Check the troubleshooting checklist for your network operating system in this chapter.

7. Is your protocol enabled?

Check the STATUS line for your protocol on the configuration page. See the end of this chapter for descriptions of the information on the configuration page.

8. Is there an error message in the protocol's section on the configuration page?

See Chapter 13 for a list of error messages.

9. If you are using Token Ring, is the data rate correct?

Check the configuration page for the current settings.

10. If you are using Novell NetWare, does the printer (node address) appear in HP JetAdmin?

- Verify network and HP JetDirect settings on the configuration page. See the end of this chapter for descriptions of the information on the configuration page.
- Confirm the network settings for the printer using the printer control panel (for printers with control panels).
- See the Novell NetWare troubleshooting section in this chapter.

11. If you are using Apple EtherTalk or LocalTalk, does the printer appear in the Chooser?

- Verify network and HP JetDirect settings on the configuration page. See the end of this chapter for descriptions of the information on the configuration page.
- Confirm the network settings for the printer using the printer control panel (for printers with control panels).
- See the Apple EtherTalk and LocalTalk troubleshooting section in this chapter.

12. If you are using IBM LAN Server or Microsoft LAN Manager, does the printer (node address) appear in the HP SETUP or Port Settings utility?

- Verify network and HP JetDirect settings on the configuration page. See the end of this chapter for descriptions of the information on the configuration page.
- Confirm the network settings for the printer using the printer control panel (for printers with control panels).
- See the IBM LAN Server/Microsoft LAN Manager troubleshooting section in this chapter.
- If the printer does not show up, verify that it is not already configured.



13. If you are using Microsoft Windows for Workgroups, does the printer appear in MONITOR?

- Verify network and HP JetDirect settings on the configuration page. See the end of this chapter for descriptions of the information on the configuration page.
- Confirm the network settings for the printer using the printer control panel (for printers with control panels).
- See the Microsoft Windows for Workgroups troubleshooting section in this chapter.

14. If you are using Microsoft Windows NT 3.x, does the printer appear in HP JetAdmin?

- Verify network and HP JetDirect settings on the configuration page. See the end of this chapter for descriptions of the information on the configuration page.
- Confirm the network settings for the printer using the printer control panel (for printers with control panels).
- See the Microsoft Windows NT troubleshooting section in this chapter.

15. If you are using Microsoft Windows NT 4.0, does the printer appear in the *Add a Hewlett-Packard Network Peripheral Port* dialog box?

- Verify network and HP JetDirect settings on the configuration page. See the end of this chapter for descriptions of the information on the configuration page.
- Confirm the network settings for the printer using the printer control panel (for printers with control panels).
- See the Microsoft Windows NT troubleshooting section in this chapter.

16. If you are using HP-UX, SunOS, or Solaris, does the printer respond to HP JetAdmin?

- Verify network and HP JetDirect settings on the configuration page. See the end of this chapter for descriptions of the information on the configuration page.
- Confirm the network settings for the printer using the printer control panel (for printers with control panels).
- See the HP-UX, SunOS, and Solaris troubleshooting section in this chapter.

Novell NetWare Checklist (non-NDPS)

Troubleshooting with HP JetAdmin

The following steps list a general process to follow for troubleshooting printer related network problems using the HP JetAdmin software on a Novell NetWare network. Log on as Supervisor or Admin at any workstation before using the HP JetAdmin software.

1. Verify that the printer appears in the HP JetAdmin software.
2. If the printer does not appear in the main window of the HP JetAdmin software, click Device at the top of the main window, then click New. Double-click the printer model and verify that the printer address appears in the list of addresses. The printer address is the address of the HP JetDirect print server in the printer. This address is listed on the configuration page (also called a self-test page or configuration plot).
3. If the printer does not appear in steps 1 or 2, the HP JetDirect print server was not able to send a SAP (Service Advertising Protocol) request to the file server, or the HP JetDirect print server did not respond to a roll call. This can be caused by a variety of things, but usually relates to cable or topology issues. Try the following:
 - Verify network cabling, connections, and router configurations.
 - Verify that the data rate is correct (Token Ring print server only).
 - Verify that the HP JetDirect print server is receiving power, and the printer is online.
 - Turn the printer off, then back on. See if the HP JetDirect print server shows up in HP JetAdmin.
 - Select the Filters tab (View, Filter) and make sure the intended HP JetDirect print server is not excluded (such as, by printer model, printer address, network, printer capabilities, or other criteria).
 - Check the configuration page for any network errors.
 - Run the HP JetAdmin software from another workstation.
4. If the printer does appear in the main window of the HP JetAdmin software, click the printer in the list of printers in the main window.
5. If the printer does not appear in the main window, but does appear in the list of unconfigured printers (Device, New), configure the printer. Then click the printer in the list of printers in the main window.

6. Click Device at the top of the main window, then click Summary to view the printer's status. If the status indicates a printer problem such as paper out, paper jam, or toner out, respond to the printer problem, then continue. Click Close to exit the window.

7. Double-click the printer in the list of printers, then click the Diagnostics tab to view HP JetDirect print server and network diagnostics information. Click Expand All, then scroll through the window to view all of the information. Colored icons alert you to possible problems: red indicates a problem, yellow indicates a potential problem, and green indicates no current problem exists. Click Cancel or OK to exit the window.

8. Click Device at the top of the main window, then select Modify. Click Next or the appropriate tab and verify the following:

- The print server is configured correctly.
- The print server is configured to service the appropriate set of queues.
- The print server is set for the correct operating mode (Queue Server mode or Remote Printer mode).

9. Click Cancel or OK to exit the configuration pages.

10. With the printer highlighted in the list of printers, click Device at the top of the main window, then click Test Page to send a PCL test page to the printer. Verify the Test Page prints successfully.

12 Troubleshooting the Print Server

Novell Print Server Checklist (Remote Printer Mode)

1. Is the Novell print server connected or waiting for a job when the HP JetDirect print server is configured in Remote Printer mode?

Make sure that the print server is connected or waiting for a job as shown in the PServer screen. To start the print server, see the documentation shipped with your network software.

2. Are the print queues set up, shared, and authorized properly?

Check that you have set up and shared the print queues correctly. See your network documentation for information on setting up and sharing queues.

3. What does the NetWare File Servers status information show for this HP JetDirect print server in HP JetAdmin (Device, Properties, Diagnostics)?

Online help is available for diagnostics information.

4. What does the print server window show as the print server's status?

If the status is not waiting for Job, configure the HP JetDirect print server using the HP JetAdmin software, supplied with your HP JetDirect print server. See the chapter on Novell NetWare networks for instructions on using HP JetAdmin.

5. Did you select Remote Other/Unknown as the printer type in PCONSOLE?

If the printer type selection in PCONSOLE is correct, the printer's connection to the network may have been broken. Turn the printer off and wait for the status message to change to Not Connected. Turn the printer on again and wait for the print server's status to change to waiting for Job. If the status does not change, take the Novell print server down and bring it back up again.

File Server Checklist

1. Is there enough disk space available on the file server?

Lack of disk space can cause the HP JetAdmin software to install incorrectly or can cause print jobs (especially large jobs) to not print. See the chapter for your network operating system for disk space requirements.

2. Is the file server up and running?

Verify that you have selected the correct file server by typing WHOAMI at the DOS prompt. If the file server is down, bring it up.

3. Do you have the correct file server associated with the correct print server?

Verify that you have selected the correct file server by typing WHOAMI at the DOS prompt.

Server to Printer Connection Checklist

1. Are any of the queues to be served by that printer disabled?

Enable all queues or eliminate unnecessary queues and try printing again.

2. Is the data being sent to the printer?

- Make sure the print queue is not on hold.
- Verify that only one print server is servicing the queue and that it is the correct print server. Use PCONSOLE to verify print server configuration. See your NetWare documentation for instructions on running PCONSOLE.
- Recheck the HP JetDirect print server's data rate and port switches (Token Ring print server only).

3. Does an **INITIALIZING** message appear on the configuration page?

Wait several minutes and print another configuration page. If the message persists, make sure any file servers, bridges, or routers on your network are operating correctly and make sure the network is correctly wired. If the message still persists, you may have an unsupported frame type running on your network.

4. Does the HP JetAdmin software report "Unable to Connect to Server?"

- Use HP JetAdmin or PCONSOLE to confirm that the print server and print queues are configured correctly. This includes verifying the print server name, remote printer number, remote printer configuration, and the queue name.

- Recheck the network cabling, frame type, and data rate switch settings on the HP JetDirect print server (Token Ring only) by printing a configuration page.

5. Can you see the HP JetDirect print server on the network using the HP JetAdmin software?

Verify the frame type on the configuration page. The HP JetDirect print server supports the following frame types on an Ethernet network:

- ETHERNET_802.3
- ETHERNET_802.2
- ETHERNET_II
- ETHERNET_SNAP

The HP JetDirect print server supports the following frame types on a Token Ring (802.5) network:

- TOKEN-RING
- TOKEN-RING_SNAP

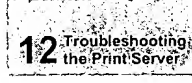
Workstation Checklist

1. Is the workstation running the network software?

Make sure the network operating system software is loaded. If you cannot load your network software, see the documentation shipped with your network software.

2. Is your software application correctly configured to print to the network printer?

Make sure your software application is printing to the correct port using the correct driver and that the port is redirected correctly. In Windows 95, verify your printer is configured correctly. See your network documentation for more information.



Workstation to Print Server Connection Checklist

1. Is the workstation connected to the shared queue for the network printer?
 - Select the Jobs List in HP JetAdmin, then verify that a printed job is queued to the intended queue (NetWare, Jobs/Queues, Properties).
 - Use PCONSOLE to verify that a print queue is not on hold.
 - Use PCONSOLE to verify the print queue is being serviced by a print server.
2. Is Novell's CAPTURE utility running?

Use the CAPTURE or NPRINT command or HP JetPrint (Windows 3.1) to send data to the printer. Use the command "CAPTURE SH" to verify if the redirection set up by HP JetPrint is working correctly.
3. Is another printer taking jobs from the queue before the new printer can service the jobs?

Disassociate one of the 2 printers from the queue or make sure the HP JetDirect print servers have unique print server names.

12 Troubleshooting the Print Server

Windows 95 Networking Checklist

1. Are any printers listed under HP Network Printers in the Exploring - Network Neighborhood window?
 - Make sure you are logged on to Windows 95 correctly.
 - Verify that at least one printer is currently configured for the network.
 - Make sure you have the IPX protocol stack running.
2. For additional troubleshooting information, consult the Windows 95 online help (search under network printers, troubleshooting).

Apple EtherTalk and LocalTalk Checklist

NOTE

After turning on the printer, wait 2 minutes, then print a configuration page (also called a self-test page or configuration plot). Verify that the correct zone name, printer name, and phase appear on the configuration page.

Print Server Checklist (EtherTalk)

1. Are both the Macintosh and the HP JetDirect print server configured to use the same EtherTalk Phase (Phase 1 or Phase 2)?

Your Macintosh and printer must have the same selected Phase. On System 7.0 and above, Macintosh only supports Phase 2.

You can set the Phase on the printer's control panel. See the hardware installation guide for your print server or the getting started guide your printer for information on setting the printer's control panel. The HP PaintJet XL300 printers are Phase 2 only devices.

2. Has the EtherTalk network driver been selected on your Macintosh system?

Make sure Ethernet is selected in the Network Control Panel.

3. If the printer is connected to EtherTalk, and the Macintosh is connected to LocalTalk, is there a router installed between the EtherTalk and LocalTalk networks?

Make sure you have a router installed and configured to convert LocalTalk to EtherTalk.



Print Server Checklist (LocalTalk)

1. Is the network terminated correctly?

You must have a terminating resistor inserted at both ends of your network. Also, your network must form a line, not a loop. Or, if you are connected to a star topology, you cannot have more than four terminating resistors on one branch.

2. Did you plug your LocalTalk printer cable into the *modem* port instead of the printer port on your Macintosh?

The modem port is identified by a phone icon; the printer port is identified by a printer icon. See your Macintosh documentation for the location of the printer port.

Chooser Checklist

1. Does the printer driver appear in the Chooser?

Reinstall the software and make sure that you have only one System folder on your Macintosh.

2. Does the printer name appear in the names list?

- Make sure that AppleTalk is ON (the button next to Active is highlighted).
- Make sure the printer is turned on and in the READY state for a few minutes.
- If the printer resides on a network with multiple zones, make sure the correct zone is selected from the *AppleTalk Zones:* list.
- Make sure the printer has not been renamed or rezoned since it last appeared in the Chooser.
- If you are using an HP LaserJet IIISI printer, make sure the printer is in the PostScript mode (SYS=POSTSCRIPT).

3. Did you select the printer in the Chooser?

Select the printer in the Chooser.

4. Did you reselect the printer in the Chooser if it was renamed or rezoned?

Select the printer in the Chooser using the new name or zone.

5. Did you select the printer's name after selecting the printer driver icon?

First select the printer driver icon, then select the printer's name.

6. Is Background Printing enabled?

Open the *Print Monitor* window to see if a message is displayed indicating that a printing error has occurred, or that the printer needs attention.

The HP LaserJet Utility Checklist

1. Are there multiple printers with the same or a similar name that may have received the print job?

Use the HP LaserJet Utility to make sure that all devices have unique names. The name of the printer appears on the configuration page. (Some devices, such as the HP DesignJet 200 plotter, may not support name changes with the HP LaserJet Utility. For these devices, the default name cannot be changed.)

If your printer is not an HP LaserJet, you may not be able to use the HP LaserJet Utility. In this case, see your printer documentation for guidance on selecting printer names.

2. Is your printer listed in the printer names list?

Make sure the printer is turned on. It must be on for a few minutes before it appears. If the printer resides on a network with multiple zones, you need to select the correct zone from the *AppleTalk Zones* list.

The Zone Checklist (EtherTalk Only)

1. Was the zone grayed out when you attempted to rezone the printer?

Your printer must be on a Phase 2 EtherTalk network, and an EtherTalk router must be present to rezone the printer.

2. Is the zone in which you wish the printer to reside listed in the *Accessible Zones* list?

Check that the EtherTalk router's software is properly configured.

IBM OS/2 LAN Server and Microsoft LAN Manager Checklist

HP software supports the following system and network combinations:

- Microsoft OS/2 version 1.21 or 1.3, with Microsoft LAN Manager version 2.0c, 2.1, 2.1a, or 2.2
- IBM OS/2 version 1.3 with IBM LAN Server version 1.3 or 2.0 Advanced
- IBM OS/2 version 2.0, 2.1, 2.11, or 3.0 with IBM LAN Server version 2.0 Entry, 3.0 or 4.0 Advanced, or 3.0 or 4.0 Entry

File Server Checklist

The following items use the command line options, but you may view the server's configuration using the server's user interface (see your network operating system documentation).

1. Is the server running LAN Server or LAN Manager and have the print queues been shared properly?

- Make sure the version of OS/2 is 1.3 or above. At the OS/2 command prompt, type: `VER` and press **Enter**.
- Verify that the print queue is operating correctly. At the OS/2 command prompt, type: `NET SHARE` and press **Enter**. The shared print queue name should appear on the list.

2. Is the printer queue on hold?

You can view the shared printer queue using the Print Object or Print Manager on the server. You can also use the NET PRINT utility. At the OS/2 command prompt, type `NET PRINT` and press **Enter**. If the status shows Queue Held, release the queue.

3. Has the printer port been altered in the Print Object Port Settings or in the Print Manager?

Access the Print Object Settings or Print Manager and check the assigned printer port for the correct configuration.

4. Are you using the correct printer device driver?

On OS/2 clients, the server only prints jobs from OS/2 clients with the same device driver selected on the workstation and file server. This means that both the client and server should be using the PCL driver, or both should be using the PostScript driver. If you need to switch between PCL and PostScript, both the client and the server should have access to both drivers.

On Windows clients operating on the LAN Server network, it is not required that the same device driver is selected on the client and server. In this case, you can have the IBM NULL driver selected on the server.

5. Is the IEEE 802.2 protocol selected, configured, and does its device drivers load properly?

(802.2 is referred to as Remote Boot Protocol-RPL for Microsoft LAN Manager). For 802.3 Ethernet, the HP JetDirect print server only supports the 802.3 protocol. See the README file for 802.2 configuration requirements.

Server to Printer Connection Checklist

1. Does the status message **See error log** appear when you run **SETUP** and check the status of the printers listed on the window?

There may be a problem with the network, server, printer, or configuration. Check the error log to see what error is listed (for information about accessing the error log, see the chapter for IBM OS/2 LAN Server and Microsoft LAN Manager networks or the online help). The server may have temporarily lost the printer connection. The connection may be re-established by sending a print job. For Token Ring only, recheck the print server's data rate switch.

2. Is the HP Network Printer Redirector running (HPREDIR.EXE)?

SETUP indicates if the Redirector is not running. If it is not running, see the message in the error log. If HPREDIR does not run, make sure there are 18 link stations and 1 SAP available for the HP JetAdmin software. See your network operating system documentation for more information.

3. Is the HP network port driver running (IBM LAN Server 3.x or 4.x)?

Verify the HP network port driver appears on the print object's Output Port page and that the appropriate port is selected. Double-click on the network port to bring up the Port Settings, then check the connection status on the Port Options page and the errors on the Log page.

4. Is there another status listed under the printer icon?

- See Chapter 5 for printer status messages and their definitions.
- View the status information about the shared queue using the NET SHARE utility. At the OS/2 command prompt, type:

NET SHARE and press **Enter**.

- Put the queue on hold then send a print job to the queue to see if the job appears in the queue. Then release the queue and note if an error occurs.

5. Does the print server address appear in the HP JetAdmin software?

Make sure the HP JetDirect print server is not already configured on the network or on another network that uses the DLC protocol.

Workstation Checklist

1. Does the **NET USE** command work?

To check this type **NET USE**. If the queue is not available, run **NET USE** again. For example, type:

NET USE LPT1 \\SERV\PRNPCL and press **Enter**.

where **SERV** is the server name and **PRNPCL** is the queue name.

2. Is the network print object set up correctly?

To check this type **NET USE**. If the queue is not available, run **NET USE** again. For example, type:

NET USE LPT1 \\SERV\PRNPCL and press **Enter**.

where **SERV** is the server name and **PRNPCL** is the queue name.

3. Does the user have access rights to the queue?

Check the network operating system documentation.

4. Is the software application you are running configured to print to the correct device name or queue?

See your network application documentation for information on setting up and configuring queues.

Workstation to Print Server Connection Checklist

- Is the workstation connected to the printer queue for the network printer?

To check this, place the shared queue on hold at the server. Then copy a file to the shared queue. For example, for PCL printing type:

COPY C:\CONFIG.SYS deviceName and press **Error**

When the printer is set up for PostScript printing, copy a PostScript file. Return to the server and check the print queue. If the job appears in the print queue, the workstation is connected to the server.



Microsoft Windows for Workgroups Checklist

- Is there an error listed in the HP MONITOR?

Run the HP MONITOR. Select the Display All item from the Log menu, then check the messages. Double-click on a message to display more detailed information.

Errors, warnings, and informational messages are continuously recorded, even when MONITOR is not running.

Workstation Checklist

Check the following items on the workstation where the HP MONITOR software was installed:

1. Does Windows display Cannot find MONITOR.EXE or one of its components?

Check that HPW4WPC.DLL resides in the same directory as MONITOR.EXE. The default directory is HPNETPRN.W4W.

2. Has the DLC protocol been installed on the workstation?

The Microsoft DLC protocol is included on the "JetDirect Utilities for Windows for Workgroups" disk. It must be installed using the network's applet from the Windows Control Panel. See the Windows for Workgroups and Windows NT networks chapter for more information.

3. Has the DLC protocol been loaded?

The DLC protocol is loaded from the AUTOEXEC.BAT file. After rebooting, verify that it has been loaded by typing MEM/C at the MS-DOS prompt and look for MSDLC in the list that appears.

4. Do the following lines exist in your SYSTEM.INI file in the Windows directory?

```
device = hpvnpd.386  
TimerCriticalSection = 5000
```

If these lines do not exist in your SYSTEM.INI file, reinstall the HP JetAdmin Monitor software.

5. Is there a memory problem?

Check the HP Network Portal section of the SYSTEM.INI. The MaxNumPorts variable controls the maximum number of ports that can exist at one time. Multiply this number by 60 to determine how many bytes of lower memory it takes. The MaxNumBuffers variable controls the number of print buffers available. Each printer buffer takes approximately 2,048 bytes of lower memory.

Printing Checklist

1. From the HP MONITOR, are you able to see the status of your network printer (such as offline, out of paper, ready)?

There is a problem with the physical network components such as the cables or the HP JetDirect print server. If you cannot get printer status, verify that the physical network components are working.

2. Does the network address appear in the HP MONITOR's *Add a Network Peripheral Port* window?

There may be a connection problem, or there are over 120 printers connected to the network. Make sure the printer is on and connected. If no addresses appear, there may be a network problem.

3. Does the MONITOR printer status display *Not Available*?

The printer is currently connected to another network operating system's server. If the connection is to an OS/2 server, the printer must be turned off, then back on to break the connection.

4. Can you print to your network port?

Creating a network port with MONITOR does not allow you to print to it. To print to it, you must connect a printer to the network port using the Printers applet from the Control Panel.

5. Is your print job making it to the spooler?

Go to the Print Manager and pause the printer that is connected to your network port. Print from your application. Make sure that the print job appears in Print Manager. If it does, restart the printer and note any changes by checking the printer itself, looking at its status as reported by MONITOR, and checking the error log in MONITOR.

12 Troubleshooting the Print Server

6. Is the printing load heavy and does performance seem to be low?

Check the MaxNumBuffers value in the SYSTEM.INI. This value may be increased.

7. Are there any messages in the MONITOR's error log?

Check the MONITOR's error log for useful messages.

8. Can you access the MONITOR to delete configurations?

You may delete ALL configurations by erasing the file HPVNP.D.CFG. This deletes ALL previously configured ports.

Microsoft Windows NT 3.x Checklist

For troubleshooting information, consult the online help available from the *Add a Hewlett-Packard Network Peripheral* Port window. See the Microsoft NT Networks (Versions 3.1 and 3.51) chapter for procedures to call up the window. You may also run NTHelp (WINHLP32) and load HPMON.HLP from the NT system 32 directory.

Microsoft Windows NT 4.0 Checklist

For troubleshooting information, consult the online help available from the *Add a Hewlett-Packard Network Port* window. See the Microsoft NT Networks (version 4.0) chapter for procedures to call up the window. You may also run NTHelp (WINHLP32) and load HPLOCMON.HLP from the NT system 32 directory.

12 Troubleshooting the Print Server

HP-UX, SunOS, and Solaris Checklist

Verifying the Host Software Installation

If the print server and network hardware appear to be functional, verify that the HP JetAdmin software has been installed correctly.

1. Run the HP JetAdmin software.
2. In the main menu of the HP JetAdmin software, select Diagnostic. The *Diagnostics* menu appears.
3. Select *Examine printing path* to help isolate the source of a print problem. This feature tests the local spooler operation by sending a file to the printer using the *lp* command. Any file may be submitted for this test. Typically, this test is used to diagnose printing problems with a particular file. The test first verifies that the local spooler is functional for a user provided queue. A functional spooler satisfies the following conditions:
 - The spooler is running
 - The queue is accepting jobs
 - The queue is enabled
 - Permissions are set for key directories and files

You are prompted for a (test) filename with options. The idea is to re-create the job submittal process but intercept the spooler output. You are then provided the job profile as determined by the spooler output. This displays information such as: resolution setting (optional) number of collated copies requested, and the Printer Description Language (PDL) to be used (PCL, PostScript, or Relay). A non-functional spooler terminates this test and returns you to the *Diagnostics* menu.

- If the spooler output does not exist, that clearly isolates the problem area for further investigation. See your system documentation or contact your system vendor.
- If the spooler output does exist and is correctly profiled, a potential problem exists at the networking software or printer level. If the output is not correctly profiled, that isolates the potential problem in the filters used.

On SunOS 4.1.x, this feature is not supported and displays only queue status.

4. Select **Verify**. Installation of software to display any files that are missing or services that are not available.
5. Select **Test network printer accessibility** to perform the following three operations:

- Verify that the target node is reachable over the network. This operation can indicate conditions like a powered off target printer, or a broken connection due to cable, bridge/router, or other component.
- Check if the target node is an HP network printer and not a workstation system. This test can indicate conditions if an incorrect IP name is provided for an HP printer.
- Make sure that the source host has access rights to the target printer. This test can indicate if the local (source) host does not have access to the target HP printer.

6. Select **Print** a test page to send a test page directly to the target printer, bypassing the spooler to prove that data can be sent to the printer and printed.

NOTE

Only the first 18 characters of the TCP/IP hostname are printed on the self-test page.

7. Select **View HP JetDirect interface's current configuration** to display the current configuration settings. The configuration setting can also be printed out and filed for archival purposes.

8. Select **Check BOOTP and TFTP operations** to verify that the local host's BOOTP and TFTP are functional. This conducts a self-test, simulates a bootstrap query, and responds. This requires superuser privileges.

9. Select **Show HP JetDirect interface's protocol settings** to test multi-protocol HP JetDirect print servers. A list of status for each protocol is displayed. The information can be printed and filed for archival or diagnostic purposes.

10. Select **Display operational and protocol statistics** to display detailed information on network packet transmissions or collisions.

11. On SunOS, check the install log `/tmp/hpnpinstall.log` to check for error or warning messages.

12. If necessary, repeat all of the steps in the "HP Support for UNIX (HP-UX, SunOS, and Solaris) Networks" chapter to install and configure the software.

Verifying the Network Configuration Data

To verify that the HP JetDirect print server contains the correct network configuration data, use the following instructions that correspond to the method you used to configure the print server.

If You Used BOOTP/TFTP

1. Print a configuration page (also called a self-test page or configuration plot) that contains the print server status information.
2. Verify that the following parameters are set correctly:

- **CONFIG BY:** Verify that "BOOTP/RARP" is set. If "FRONT PANEL/TELNET" is indicated, change it to "BOOTP/RARP" using the printer control panel keys as described in the hardware installation guide for your print server or the getting started guide for your printer.
- **IP ADDRESS:** Verify that the correct Internet Protocol address assigned to the HP JetDirect print server is set. The IP address is a required entry.
- **SUBNET MASK:** If subnetting is being used, verify that the correct subnet mask is set.
- **DEF. GATEWAY:** If you specified a default gateway address with the HP JetAdmin software, verify that the correct default gateway address is set.
- **SYSLOG SERVER:** Verify that the correct syslog server address is configured. If the syslog server is not configured, the print server does not send syslog messages.

To change these or other parameters, delete the BOOTP entry and re-create one with the new settings. Then turn the printer off and back on so the printer re-reads the bootp information. For more information, see "Removing the Printer from the BOOTP Server" and "Using BOOTP/TFTP" in Chapter 10.

3. Verify that your BOOTP server responds to the print server's BOOTP request. Run the HP JetAdmin software and select **Test network printer accessibility** from the *Diagnostics* menu. If this test fails, look in your syslog file for messages from the bootpd daemon program to identify possible causes such as configuration issues in `inetd.sec`.
4. On SunOS systems that use NIS, check the NIS services map to make sure BOOTP services are provided. For more information, see the section "Configuring the HP JetDirect Print Server" in Chapter 10.)

If You Used RARP

1. Make sure the IP address indicated on the status page and the entry in the `/etc/ethers` file are the same.
2. Verify that the RARP daemon on the host responds to RARP requests from your HP JetDirect print server.

For more information on RARP, see the RARP man page on your UNIX host.

If You Used the Control Panel or Telnet

1. Print a configuration page (which contains the print server status information).

2. Verify that the following parameters are set correctly:

- **CONFIG BY:** Verify that "FRONT PANEL/TELNET" is set. If "BOOTP/RARP" is indicated, type the configuration data using the printer control panel keys as described in the hardware installation guide for your print server or the getting started guide for your printer.
- **IP ADDRESS:** Verify that the correct Internet Protocol address assigned to the HP JetDirect print server is set. The IP address is a required entry.
- **SUBNET MASK:** If subnetting is being used, verify that the correct subnet mask is set. All nodes on a network with a given network address must specify the same subnet mask.
- **DEF. GATEWAY:** If you typed a default gateway address from the front panel, verify that the correct default gateway address is set.

If you need to correct any of these parameters, see any of the following:

- The hardware installation guide for your print server.
- The printer control panel configuration instructions in the printer getting started guide.



Verifying the Communication Path

The HP JetAdmin software has a script that uses ping to test the connectivity.

1. Run the HP JetAdmin software (`/usr/lib/hpnp/jetadmin`) and select **Test network printer accessibility** from the *Diagnose/ics* menu.
2. If the connectivity test fails:

- Check that all of the gateways between the host, running the HP JetAdmin software and the printer are up.
- Check that your node names and IP addresses in `/etc/hosts`, `NIS` (Network Information Service), or `DNS` (Domain Name System) are typed correctly.
- Check the subnet mask.
- Check for duplicate IP addresses.
- Make sure that the Def. Gateway address used is the IP address on the HP JetDirect print server side of the gateway.
- Make sure that the IP address assigned to the printer is valid for the subnet that it is connected to and the subnet mask being used.
- Check `SYSLLOG` to verify bootp succeeded correctly. Bootp may not be automatically routed. The router may need to be configured.

3. If the connectivity test succeeds, select **Print a simple test page** to printer from the *Diagnose/ics* menu. Then select an appropriate file type for your printer. This sends a test file to the printer that bypasses the spooler.

This test also uses the `hpnpadm.in` utility to verify that the host can print to the printer. You can change the host access list (those hosts that are allowed to print to this printer) by changing the `BOOTPTFTP` print server configuration parameters.

NOTE	Use the HP JetAdmin software for managing and troubleshooting your network-based printer solution.
-------------	--

Verifying Spooler Configuration

If you are able to print a file on the printer when you bypass the spooler, but you are not able to print through the spooler (using the `lp` command), you may have a bad file or your spooler configuration may not be correct.

If you used the HP JetAdmin software to set up the spooler, follow the steps below:

1. Run the HP JetAdmin software.
2. Select **Examine Printing Path** from the *Diagnostics* menu.
3. Send the same file that you were not able to print previously using the same options to the same spool queue as when the problems occurred.

The HP JetAdmin software leads you through the printing process and identifies the possible trouble areas.

NOTE If only the superusers can print, verify the permissions for `/dev/null`. The permissions should be `666`.

On SunOS Systems

If you used the HP JetAdmin software to set up the spooler, follow the steps below:

1. Look for an error message in the default log file for spooler errors:

```
/var/adm/lpd-errors
```

There is another log file for each specific printer. The log file is specified in the printer's `/etc/printcap` entry. The log file's printcap entry looks similar to the following:

```
:lf=/var/spool/printername$log:
```

2. Determine the name and path of the printer's log file, then look for an error message in that file.
3. If required, see your host system manuals to troubleshoot the spooler subsystem.

Troubleshooting an LPD Configuration

The troubleshooting steps below describe how to troubleshoot printing problems you may have with the HP JetDirect print server.

1. Print a configuration page (also called a self-test page or configuration plot).
2. Verify that the IP configuration values are correct. If they are not, reconfigure the HP JetDirect print server.
3. Log onto the host system and type:

```
ping <IP address>
```


where `<IP address>` is the IP Address assigned to the printer.
4. If ping fails, make sure the IP Address on the configuration page is correct. If the address is correct, the problem is in the network.
5. If the ping test passes, print a test file. At the UNIX prompt, type:

```
lpr -Pprinter_name test_file (BSD based systems)
```



```
lp -dprinter_name test_file (Sys V based systems)
```


where `printer_name` is the name of your printer and `test_file` is an appropriate file (ASCII, PCL, PostScript, HP-GL/2, or text) for the printer defined in the `rp` tag in the printcap file.
6. If the test file does not print, do the following:
 - Check printcap entries
 - Check printer status (using `lpc` or a similar process)
 - Examine the contents of the logfile for this printer, such as

```
/usr/spool/lpd/error_log_filename
```
 - Check other log files, such as

```
SunOS: /var/adm/messages /var/adm/lpd_errs
```



```
HP-UX: /usr/adm/syslog
```

7. If the test file prints but is formatted incorrectly, do the following:

Check `.rp` tag in `printcap` file.

- Example 1 (suggested name for an ASCII or text printer):

```
text~ lji_text:\
:lp=\
:rm=laserjet1:\
:rp=text:\
:lf=/usr/spool/lpd/ERRORLOG:\
:sd=/usr/spool/lpd/lji_text:
```

- Example 2 (suggested name for PostScript, PCL, or HP-GL/2 printers):

```
raw l lji_raw:\
:lp=\
:rm=laserjet:\
:rp=raw:\
:lf=/usr/spool/lpd/ERRORLOG:\
:sd=/usr/spool/lpd/lji_raw:
```

8. Check that the printer is set up to print the type of test file, you specified: PCL, PostScript, HP-GL/2, or ASCII.

9. Check whether the printer was turned off or lost its LAN connection in the middle of a print job. LPD queues may become disabled or stop sending data if the printer is powered off or if the LAN connection is broken when the printer is in the middle of printing a job. (Example: power is turned off to fix a paper jam.)

Use the HP-UX command `lpstat -Pname` to find out if the queue has been disabled after the printer has powered up again or the connection is reestablished.

SUN system queues simply stop sending to the printer. The job being printed during the power cycle or connection break may be lost.

The disabled queue can be restarted using one of the following commands:

```
HP-UX:          enable queue
SUN:            lpcc restart queue
```

Understanding the Ethernet Configuration Page

This section describes the Ethernet/802.3 configuration page (also called a self-test page or configuration plot) for HP JetDirect print servers.

The networking section of the Ethernet/802.3 configuration page is divided into seven sections:

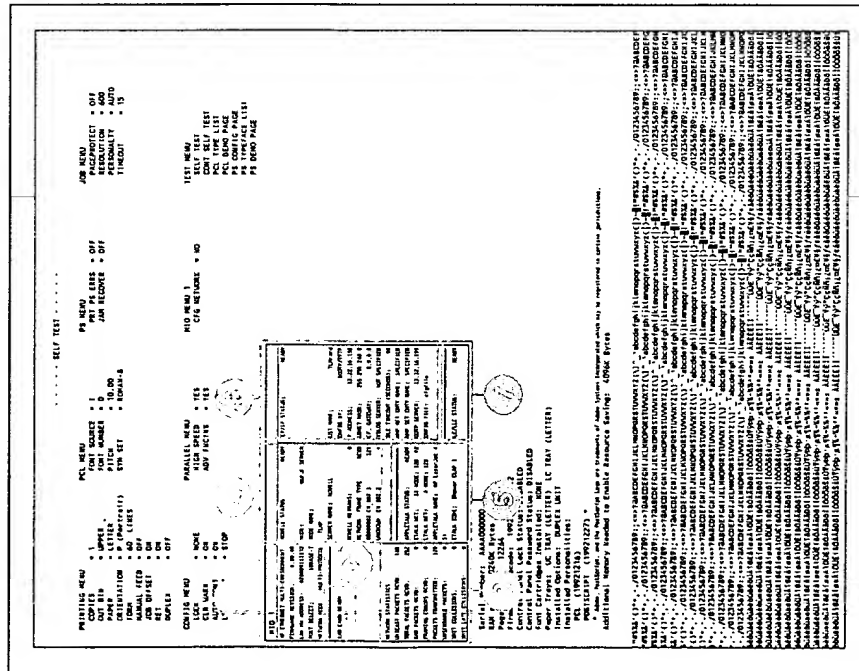
Item	Description	Troubleshooting Information
1	HP JetDirect product information (Table 13-5)	The LAN address listed here is the address the HP JetAdmin software sees. This section also shows what port has been auto selected. This can verify that the HP JetDirect print server is looking at the correct port. An incorrect port may indicate a bad connection or a bad cable.
2	HP JetDirect print server status information (Table 13-5)	This lists error conditions or Ready.
3	Network statistics (Table 13-5)	This is an example of a network with good hardware and plenty of bandwidth. All zeros or a high percentage of any of the items currently at zero can indicate network hardware problems.
4	Novell NetWare status information (Table 13-1)	This lists information including Network Frame Types received. This setting may indicate if the HP JetDirect print server is locking onto the wrong frame type, if multiple frames are using the same network number, and more.
5	Apple EtherTalk/LocalTalk status information (Table 13-2)	This lists information including if the AppleTalk protocol is working correctly, or if the protocol is even enabled. The NET and NODE information can be used to verify the printer is communicating correctly on the network. Name and zone verify you selected the correct printer, and P2 (shown directly below READY) indicates you are using the Phase 2 EtherTalk protocol. This should be the same on the printer and on your Macintosh computer.
6	HP-UX, SunOS, and Solaris (TCP/IP) status information (Table 13-3)	This lists information that should be checked for accuracy when troubleshooting, such as TCP/IP status, IP Address, Subnet Mask, and Def. Gateway. From the information in this section you can verify if this is the only device using this IP address and if the address is valid based on the subnet mask that is being used. If a router is used, you can verify that the Def. Gateway is the IP address of the router on the printer side of the router. Note: Only the first 18 characters of the hostname are printed on the configuration page.
7	LAN Server/LAN Manager and Windows for Workgroups/Windows NT status information (Table 13-4)	Lists the server address after it has been configured.

Understanding the Token Ring Configuration Page

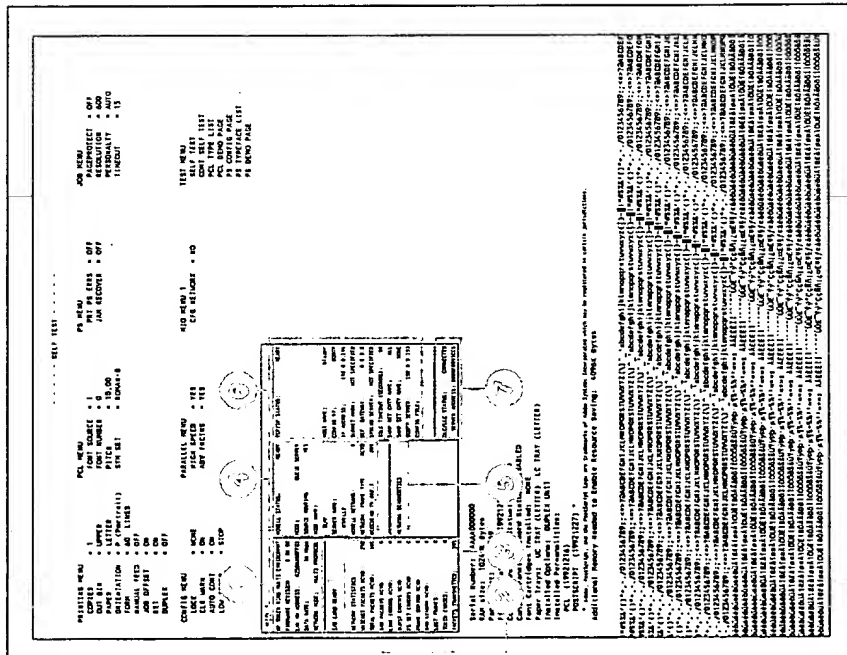
Use the information in this section if you have connected your printer to a Token Ring (802.5) network with an HP JetDirect print server.

The networking section of the Token Ring configuration page (also called a self-test page or configuration plot) is divided into seven sections:

1	Description	Troubleshooting Information
2	HP JetDirect product information and HP JetDirect print server specific information (Table 13-5)	The LAN address listed here is the address the HP JetAdmin software sees.
3	HP JetDirect print server status information (Table 13-5)	This lists error conditions or Ready.
4	Network statistics (Table 13-5)	This is an example of a network with good hardware and plenty of bandwidth. All zeros or a high percentage of any of the items currently at zero can indicate network hardware problems.
5	Novell NetWare status information (Table 13-1)	This lists information including Network Frame Types received. This setting may indicate if the HP JetDirect print server is locking onto the wrong frame type, if multiple frames are using the same network number, and more.
6	Network Diagnostics (Table 13-5)	Lists Token Ring diagnostic information.
7	HP-UX, SunOS, and Solaris (TCP/IP) status information (Table 13-3)	This lists information that should be checked for accuracy when troubleshooting, such as TCP/IP status, IP address, Subnet Mask, and Def. Gateway. From the information in this section you can verify if this is the only device using this IP address and if the address is valid based on the subnet mask that is being used. If a router is used, you can verify that the Def. Gateway is the IP address of the router on the printer side of the router. Note: Only the first 18 characters of the hostname are printed on the configuration page.
8	LAN Server/LAN Manager and Windows for Workgroups/Windows NT status information (Table 13-4)	Lists the server address after it has been configured.



12 Troubleshooting the Print Server



HP JetDirect Messages

Overview

This chapter describes the messages, network statistics, and status that can be printed on a configuration page (also called a self-test page or configuration plot). If you have not printed a configuration page from your printer, see the hardware installation guide for your print server or your printer's getting started guide for instructions.

These messages include configuration information and error messages for each network operating system. The configuration information for individual networks is listed in the following tables:

- Table 13-1 - Novell NetWare Configuration Messages
- Table 13-2 - Apple EtherTalk/LocalTalk Configuration Messages
- Table 13-3 - HP-UX, Solaris, and SunOS (TCP/IP) Configuration Messages
- Table 13-4 - LAN Server/LAN Manager and Windows for Workgroups/Windows NT Configuration Messages
- Table 13-5 - General HP JetDirect messages (status and error messages listed in alphabetical order)

See chapter 12 for descriptions and illustrations of Ethernet and Token Ring configuration pages.

NOTE

Message	Description
NOVELL STATUS: DISABLED	Indicates the current Novell NetWare status. DISABLED indicates that either Talk was manually disabled through the printer's control panel (if available), or by software (HP JetAdmin). LocalTalk is always enabled.
READY	READY indicates the HP JetDirect print server is awaiting data.
INITIALIZING	INITIALIZING indicates that the print server is registering the node address or name.
MODE:	The mode used by the print server.
QUEUE SERVER REMOTE PRINTER	QUEUE SERVER indicates that the print server receives data directly from the queue; REMOTE PRINTER, with the printer number following it, indicates that the print server emulates a Novell remote printer. If the printer is not configured, this field displays QUEUE SERVER.
SOURCE ROUTING: UNKNOWN,	Indicates the current status of source routing. UNKNOWN is displayed when NetWare source routing is configured to AUTO, but the source routing method has not been detected.
NO	NO is displayed when source routing is configured to AUTO, and the automatic algorithm has determined that source routing should not be used.
YES	YES is displayed when source routing is configured to AUTO, and the automatic algorithm has determined that source routing should be used.
DISABLED, SINGLE R, or ALL RT	DISABLED, SINGLE R, or ALL RT is displayed when the user has manually configured source routing through the printer's control panel or through software (HP JetAdmin).
NODE NAME:	Queue Server Mode: The print server name. This name must match a valid print server on the appropriate NetWare file server. The default name is NPXXXXXX. Remote Printer Mode: The name you gave to the network printer when you used HP JetAdmin to configure the network printer. The default name is NPXXXXXX.
SERVER NAME:	The name of the NetWare file server or print server. If no name is displayed, the printer has not been configured.
NOVELL RETRANS:	Number of retransmissions necessary because a remote node did not acknowledge receipt of a frame sent to it. Excessive retransmissions may degrade performance, cause 40 ERRORS, or indicate developing network hardware or congestion problems.

Table 13-1. Novell NetWare Configuration Messages	
Message	Description
NETWORK FRAME TYPE RCVD XXXXXX XXXXX XXXX	The first line indicates the network number associated with the protocol frame type for communication between server and printer. The print server automatically determines the protocol frame type by listening to the NetWare data being transferred over the network, unless a specific frame type has been configured using HP JetAdmin or the printer's control panel. If UNKNOWN is listed, the HP JetDirect print server is still trying to determine which network number to use. If the network number is DISABLED, a specific frame type has been manually configured. The Frame Type value can be EN_8023, EN_8022, EN_II, or EN_SNAP. The RCVD count indicates how many packets have been received for each frame type.

Table 13-2. Apple EtherTalk/LocalTalk Configuration Messages	
Message	Description
APPLETALK STATUS: DISABLED	Indicates the current AppleTalk status. DISABLED indicates that EtherTalk was manually disabled through the printer's control panel (if available), or by software (HP JetAdmin). LocalTalk is always enabled.
READY	READY indicates the HP JetDirect print server is awaiting data.
INITIALIZING	INITIALIZING indicates that the print server is registering the node address or name.
LITALK NET: XXXXX NODE:XXX ETALK NET: XXXXX NODE:XXX: X	NET: identifies the AppleTalk Network Number on which the HP JetDirect print server is currently operating. NODE: identifies the AppleTalk Node Number which the print server chose for itself as part of its initialization sequence. PX: identifies the configured EtherTalk network protocol phase. P1 is the earlier or original version of the EtherTalk protocol. P2 is the current version of the EtherTalk protocol.
APPLETALK NAME:	The name of the printer on the AppleTalk network. A number after the name indicates that there are multiple devices with this name, and this is the Nth instance of the name.
APPLETALK TYPE	The type of the printer being advertised on the network.
ZONE NAME:	The name of the EtherTalk network zone on which the printer is located.



Table 13-3. HP-UX, SunOS, and Solaris (TCP/IP) Configuration Messages	
Message	Description
TCP STATUS: DISABLED	Indicates the current TCP status. DISABLED indicates that TCP/IP for HP-UX and SunOS was manually disabled through the printer's control panel (if available), or by software (HP JetAdmin).
READY	READY indicates the HP JetDirect print server is awaiting data.
INITIALIZING	INITIALIZING indicates that the print server is searching for the BOOTP server, or trying to get the configuration file through TFTP.
HOST NAME:	The host name configured on the print server. It may be truncated. NOT SPECIFIED indicates that no host name was specified in the BOOTP configuration information, or TFTP configuration file (using a "name:" entry).
CONFIG BY: BOOTP/RARP BOOTP/TFTP DHCP DHCP/TFTP FRONT PANEL/TELNET RARP/BOOTP/TFTP	The location from which the print server is obtaining or has obtained its IP configuration information. The options are BOOTP/RARP, BOOTP/TFTP, DHCP, DHCP/TFTP, TELNET, or the printer's control panel.
IP ADDRESS:	The Internet Protocol (IP) address assigned to the HP JetDirect print server. This is a required entry for operation of the print server.
SUBNET MASK:	The IP subnet mask configured on the HP JetDirect print server. NOT SPECIFIED is indicated if no subnet mask has been configured, or if the subnet mask is zero.
DEF. GATEWAY:	The IP address of the gateway used when sending packets off the local network. Only one default gateway may be configured.
SYSLOG SERVER:	Marks the IP address of the syslog server configured on the print server. NOT SPECIFIED indicates no syslog server has been configured, or the syslog server IP address is zero.
IDLE TIMEOUT:	The timeout value expressed in seconds after which the print server closes an idle TCP print data connection. Acceptable values are integers between 0 and 3600. A value of zero turns off the timeout mechanism.
SNMP GET CMY NAME: ALL or SPECIFIED	Indicates whether or not an IP SNMP get community name has been configured for the print server. This parameter is omitted when the print server is configured from the printer's control panel. ALL indicates that the print server will accept all SNMP community names for GetRequests. SPECIFIED indicates that a specific SNMP get community name is configured.

Table 13-3. HP-UX, SunOS, and Solaris (TCP/IP) Configuration Messages	
Message	Description
SNMP SET CMTY NAME: NONE or SPECIFIED	Indicates whether or not an IP SNMP set community name has been configured for the print server. This parameter is omitted when the print server is configured from the printer's control panel. NONE indicates that the print server will not accept any SNMP community names for SetRequests. SPECIFIED indicates that a specific SNMP set community name is configured.
BOOTP SERVER:	The IP address of the system that responds to the print server's BOOTP request with configuration data. This parameter is omitted when the print server is not configured using BOOTP. NOT SPECIFIED indicates that the server's IP address field in the BOOTP reply packet was zero.
DHCP SERVER	The IP address of the system that responds to the print server's DHCP request with configuration data. This parameter is omitted when the print server is not configured using DHCP.
CONFIG FILE:	The name of the HP JetDirect configuration file. The file pathname may be truncated to fit on two lines. This parameter is omitted when the print server is configured from the printer's control panel. NOT SPECIFIED indicates that a file was not specified in the BOOTP reply from the host.



Table 13-4. LAN Server/LAN Manager and Windows for Workgroups/Windows NT Configuration Messages	
Message	Description
DLCLLC STATUS: DISABLED.	DISABLED indicates that LAN Server was manually disabled through the printer's control panel (if available).
READY	READY indicates the HP JetDirect print server is awaiting data.
SERVER ADDRESS:	Station address of the remote end of the connection.

Table 13-5. General HP JetDirect Messages	
Message	Description
ARP DUPLICATE IP ADDRESS	The ARP layer has detected another node on the network using the same IP address as the HP JetDirect print server. Extended error information below this message shows the hardware address of the other node.
AUTO-REMOVAL ERROR	The HP JetDirect print server detected an internal hardware error following the Token Ring beacon auto-removal process and has removed itself from the ring.

Table 13-5. General HP JetDirect Messages	
Message	Description
BABBLE ERROR	Run the power-on self-test: turn the printer off, then on again. If the error persists, replace the HP JetDirect print server. For information on replacing your HP JetDirect print server, see the hardware installation guide for your print server.
BAD BOOTP REPLY	An error was detected in the BOOTP reply that the HP JetDirect print server received. The BOOTP reply either had insufficient data in the UDP datagram to contain the minimum BOOTP header of 236 bytes, had an operation field that was not BOOTPREP (YD02), had a header field that did not match the print servers hardware address, or had a UDP source port that was not the BOOTP server port (67/udp).
BAD BOOTP TAG SIZE	The tag size in a vendor specific field in the BOOTP reply is either 0, or greater than the remaining number of unprocessed bytes in the vendor specified area.
BAD LENGTH RCVD:	Total number of frames missed because they were too long for the HP JetDirect print server to receive.
BAD PACKETS RCVD:	Total number of frames (packets) received by the HP JetDirect print server with errors.
BOOTP IN PROGRESS	The HP JetDirect print server is currently in the process of obtaining its basic IP configuration information through BOOTP, and has not detected any errors.
BURST ERRORS RCVD:	Number of times the HP JetDirect Token Ring print server could detect no transitions for 5 half-bit times between the Start Delimiter (SD) and the End Delimiter (ED).
CF ERR - ACCESS LIST EXCEEDED	The TFTP configuration file specified too many access list entries using the "allow:" keyword.
CF ERR - FILE INCOMPLETE	The TFTP configuration file contained an incomplete last line that did not end in a newline character.
CF ERR - INVALID PARAM	A line in the TFTP configuration file contained an invalid value for one of the parameters on that line.
CF ERR - LINE TOO LONG	A line being processed in the TFTP configuration file was longer than the HP JetDirect print server could accept.
CF ERR - TRAP LIST EXCEEDED	The TFTP configuration file specified too many trap destination list entries using the "trap-destination:" keyword.
CF ERR - UNKNOWN KEYWORD	A TFTP configuration file line contained an unknown keyword.
CONFIGURATION ERROR	The configuration information for the NetWare functions is not stored correctly on the HP JetDirect print server. Run the HP JetAdmin software to reconfigure. If this error persists, there may be a problem with the HP JetDirect print server.

Table 13-5. General HP JetDirect Messages	
Message	Description
CRC ERROR	Check the network topology and verify all cable segments. Check for damaged cables.
DATA RATE: 4 Mbps 18 Mbps JUMPER ERROR	The Token Ring data rate at which the HP JetDirect print server can transfer information. This setting should be either 4 or 18 Megabits per second (4 or 18 Mbps), depending on your network configuration. If the DATA RATE field displays JUMPER ERROR (older HP JetDirect print servers), check the jumper switch setting on the HP JetDirect print server. For information on setting the jumper switch on the print server, see the hardware installation guide for your print server.
DISCONNECTED	The Novell NetWare protocol is disconnected. Check the server and the print server.
DISCONNECTING FROM SERVER	The server has been shut down because of an HP JetAdmin or PCONFIG configuration change or reset request. This message automatically clears after a few seconds, unless the printer is offline, is in an error state, or is servicing another I/O port or another network protocol.
DISCONNECTING - SPX TIMEOUT	The SPX connection to the print server was lost after the connection had been made. This indicates a possible network problem, or a problem with the print server. Make sure all cables and routers are functioning correctly. Try restarting the print server.
DUP NODE ADDRESS	The HP JetDirect print server found another station on the ring that already has the address which the HP JetDirect print server wishes to use. Make sure that all addresses are unique.
EF ERR - MISSING PARAM	A line in the TFTP configuration file was missing a required parameter.
ERR NEGOTIATING BUFFER SIZE	A failure was detected when selecting the buffer size to be used when reading print data from the file server. This may indicate a network problem.
FAIL RESERVING PRINTER NUM	When the HP JetDirect print server is configured for multiple file servers, the error is only displayed on the configuration page (also called a self-test page or configuration plot) if none of the file servers was successfully connected. HP JetAdmin can display all the servers' status in the Diagnostics section.
FIRMWARE REVISION: X.XX.XX	The SPX connection to the print server was lost when the HP JetDirect print server attempted to reserve the printer number. This indicates a possible network problem, or a problem with the print server. Make sure all cables and routers are functioning correctly. Try restarting the print server.
FRAME COPIED RCVD:	The firmware revision number of the HP JetDirect print server currently installed in the printer.
	Total number of Token Ring frames received with the frame copy error indicated in the Frame Status (FS) field.

HP JetDirect Messages 13-7

Table 13-5. General HP JetDirect Messages	
Message	Description
FRAMING ERROR	Check the network topology and verify all cable segments. Check for damaged cables.
FRAMING ERRORS RCVD:	Maximum of CRC (Cyclic Redundancy Check) errors and framing errors. CRC errors are frames received with CRC errors. Framing errors are frames received with alignment errors. A large number of framing errors could indicate a cabling problem with your network.
FS SET ERRORS RCVD:	Total number of Token Ring frames with frame status set errors, indicating another node could not set the frame status.
FUNCTION FAILURE	The HP JetDirect print server is unable to transmit to itself while wrapped through its lobe at the Token Ring wiring concentrator. This message may also indicate that data frames were received before physical insertion.
HARD ERROR	The HP JetDirect print server is transmitting or receiving beacon frames to or from the ring.
HP JETDIRECT JXXXXX	Indicates an HP JetDirect print server that may support Novell NetWare, Apple EtherTalk or LocalTalk, TCP/IP, OS/2, Windows for Workgroups, and Windows NT.
INITIALIZING TRYING TO CONNECT TO SERVER	The HP JetDirect print server is trying to connect to the NetWare server(s). This is a normal message. Wait until the connection is established or another status message appears.
INVALID GATEWAY ADDRESS	The default gateway IP address specified for the HP JetDirect print server (through BOOTP or NOVARAM) is an invalid IP address for specifying a single node.
INVALID IP ADDRESS	The IP address specified for the HP JetDirect print server (through BOOTP or NOVARAM) is an invalid IP address for specifying a single node.
INVALID SERVER ADDRESS	The TFTP server IP address specified for the HP JetDirect print server (through BOOTP) is an invalid IP address for specifying a single node.
INVALID SUBNET MASK	The IP subnet mask specified for the HP JetDirect print server (through BOOTP or NOVARAM) is an invalid subnet mask.
INVALID SYSLOG ADDRESS	The syslog server IP address specified for the HP JetDirect print server (through BOOTP) is an invalid IP address for specifying a single node.
INVALID TRAP DEST ADDRESS	One of the SNMP trap (Trap PDU) destination IP addresses specified for the HP JetDirect print server (through TFTP) is an invalid IP address for specifying a single node.
I/O CARD INITIALIZING (INIT)	The HP JetDirect print server is initializing the network protocols. For more information, see the network operating system status line on the configuration page (also called a self-test page or configuration plot).
I/O CARD NOT READY	There is a problem with the print server or its configuration. Following the I/O CARD NOT READY message is a status message. See this table for a detailed explanation of all status messages.

HP JetDirect Messages 13-8



Table 13-5. General HP JetDirect Messages	
Message	Description
NO CARD READY	The HP JetDirect print server is connected and awaiting data.
LAN ERROR-AUTO REMOVAL	Run the power-on self-test: turn the printer off, then on again. If this message reappears on another configuration page, you may have a problem with one of the HP JetDirect print servers on your network. Check all the print servers on the network for proper operation.
LAN ERROR-BABBLE	Check the network connections. If the connections are intact, run the power-on self-test: turn the printer off, then on again. If the error persists, replace the HP JetDirect print server. For replacement instructions, see the hardware installation guide for your print server.
LAN ERROR-CONTROLLER CHIP	Check the network connections. If the connections are intact, run the power-on self-test: turn the printer off, then on again. If the error persists, replace the HP JetDirect print server. For replacement instructions, see the hardware installation guide for your print server.
LAN ERROR-EXTERNAL LOOPBACK	The HP JetDirect print server is incorrectly connected to your network or is defective. Make sure your HP JetDirect print server is correctly attached to your network. In addition, check the cabling and BNC "T" connections.
LAN ERROR-INFINITE DEFERRAL	Your network is not correctly terminated. Check to make sure that both ends of the cable are terminated correctly, and that the HP JetDirect print server is correctly attached to the network.
LAN ERROR-INTERNAL LOOPBACK	Check the data rate switch on the HP JetDirect print server to make sure it is set correctly. For information on setting the data rate switch, see the hardware installation guide for your print server. In addition, check the cabling, external transceiver, wiring concentrator, and taps.
LAN ERROR-JUMPER	The data rate switch on the HP JetDirect print server is set incorrectly. For instructions on setting the data rate switch, see the hardware installation guide for your print server.
LAN ERROR-LOSS OF CARRIER	Check the network connections. If the connections are intact, run the power-on self-test: turn the printer off, then on again. If the error persists, replace the HP JetDirect print server. For replacement instructions, see the hardware installation guide for your print server.
LAN ERROR-NO LINKBEAT	With a 10Base-T port connected, this message is displayed if Link Beat is not sensed. Check the network cable, and verify that the concentrator/hub is providing Link Beat.
LAN ERROR-NO SOE	Check the network connections. If the connections are intact, run the power-on self-test: turn the printer off, then on again. If the error persists, replace the HP JetDirect print server. For replacement instructions, see the hardware installation guide for your print server.

13 HP JetDirect Messages

Table 13-5. General HP JetDirect Messages	
Message	Description
LAN ERROR-OPEN	The HP JetDirect print server could not insert into the ring and join the network. Check the data rate switch on the HP JetDirect print server to make sure it is set correctly. For information on setting the data rate switch, see the HP JetDirect internal print server hardware installation guides. In addition, check the cabling, external transceiver, wiring concentrator, and taps.
LAN ERROR-RECEIVER OFF	There may be a problem with your network cabling or the HP JetDirect print server. Check the cabling and BNC "T" connectors on your Ethernet network. If you cannot find a problem with your network cabling, run the power-on self-test: turn the printer off, then on again. If the error persists after the printer is turned on again, there is a problem with the HP JetDirect print server.
LAN ERROR-REMOVE RECEIVE	Run the power-on self-test: turn the printer off, then on again. If this message reappears on the resulting configuration page, you may have a problem with one of the HP JetDirect print servers on your network. Check all the HP JetDirect print servers on the network for proper operation.
LAN ERROR-RETRY FAULTS	There is a problem with your network cabling or external network configuration. Make sure that your network cable is correctly terminated at both ends.
LAN ERROR-TRANSMITTER OFF	There may be a problem with your network cabling or the HP JetDirect print server. Check the cabling and BNC "T" connectors on your Ethernet network. If you cannot find a problem with your network cabling, run the power-on self-test: turn the printer off, then on again. If the error persists, there is a problem with the HP JetDirect print server.
LAN ERROR-UNDERFLOW	There may be a problem with your network cabling or the HP JetDirect print server. Check the cabling and BNC "T" connectors on your network. If you cannot find a problem with your network cabling, run the power-on self-test: turn the printer off, then on again. If the error persists, there is a problem with the HP JetDirect print server.
LAN ERROR-WIRE FAULT	There is a problem with the network cabling. Check the cabling between the printer and the network.
LAN HW ADDRESS: XXXXXXXXXXXX	The 12-digit hexadecimal network address of the HP JetDirect print server installed in the printer. Token Ring is 100090XXXXXX and Ethernet is 080009XXXXXX.
LATE COLLISION ERROR	Check the network topology, verify all cable segments, and make sure no segment is too long.
LINE ERRORS RCVD:	Total number of Token Ring frames received by the HP JetDirect print server with code violations or CRC (Cyclic Redundancy Check) errors. A large number may indicate faulty cabling on your network.

13 HP JetDirect Messages

Table 13-5. General HP JetDirect Messages	
Message	Description
LOBE WIRE FAULT	The HP JetDirect print server has detected an open or short circuit in the cable between the HP JetDirect print server and the Token Ring wiring concentrator. Verify that this cable is functional and replace it if necessary.
LOSS OF CARRIER ERROR	Check the network connections. If the connections are intact, run the power-on self-test; turn the printer off, then on again. If the error persists, replace the HP JetDirect print server. For replacement instructions, see the hardware installation guide for your print server.
LOST FRAMES:	Number of times the end of the frame could not be detected while transmitting.
MEMORY ERROR	Run the power-on self-test; turn the printer off, then on again. If the error persists, replace the HP JetDirect print server. For replacement instructions, see the hardware installation guide for your print server.
MFG ID:	The manufacturing identification code.
NDS AUTHENTICATION ERROR	Unable to log onto the NetWare directory tree. Make sure that the print server object is defined in the directory at the correct context.
NDS CONNECTION STATE ERROR	The HP JetDirect print server cannot change the NDS connection state.
NDS ERR: CHANGE PSSWD FAILED	Cannot modify the print server password to the value expected by the HP JetDirect print server.
NDS ERR: EXCEEDS MAX SERVERS	More queues were assigned than can be handled by the HP JetDirect print server. From within HP JetAdmin or NWADMIN, remove one or more print queues from the list to be serviced by Queue Server Mode.
NDS ERR: INVALID SRVR VERS	The current version of the NetWare file server is not supported.
NDS ERR: MAX PRINT OBJECTS	Too many printer objects are assigned to the print server object. Reduce the number of printer objects assigned to the print server using NWADMIN.
NDS ERR: MAX QUEUE OBJECTS	Too many print queue objects are assigned to the printer. Reduce the number of queues assigned using the HP JetAdmin software or NWADMIN.
NDS ERR: NO PRINTER OBJECTS	No printer objects are assigned to the print server object configured to this HP JetDirect print server.
NDS ERR: NO QUEUE OBJECTS	No print queue objects are assigned to the printer objects located in the NDS directory.
NDS ERR: SRVR NAME UNRESOLVD	The file server on the network cannot be located. The server may not be running at this time or a communications problem may exist.
NDS ERR: UNABLE TO FIND TREE	The NDS tree cannot be located. The message may be caused because the file server is not running or because a network communications problem exists.

HP JetDirect Messages 13-11

Table 13-5. General HP JetDirect Messages	
Message	Description
NDS ERR: UNABLE TO LOGIN	Unable to log onto the NetWare directory tree. Make sure that the print server object is defined in the directory at the correct context.
NDS ERR: CANNOT READ Q HOST	Cannot locate the file server on the network. The server may not be running at this time or a communications problem may exist.
NDS ERR: UNRESOLVD PRINTR OBJ	The printer object cannot be located in the NDS directory.
NDS ERR: UNRESOLVED QUEUE	The print queue object cannot be located in the specified NDS context.
NDS PRINTER OBJ NOTIFY ERR	The list of notification objects assigned to the printer object cannot be located.
NDS PRINT OBJ QUEUE LIST ERROR	The list of print queues assigned to the printer objects cannot be located.
NDS PRINT SERVER NAME ERROR	The print server object cannot be located in the specified NDS context.
NDS PRNT SRVR PUBLIC KEY ERR	In HP JetAdmin, the "Print Server (Printer Name)" on the general configuration page does not match the Print Server Object Name created in NWADMIN or PCONSOLE. They must match.
NDS PS PRINTER LIST ERROR	Cannot locate a list of printer objects that should be assigned to the print server object.
NDS SRVR PUBLIC KEY ERR	In HP JetAdmin, the "Print Server (Printer Name)" on the general configuration page does not match the Print Server Object Name created in NWADMIN or PCONSOLE. They must match.
NO QUEUE ASSIGNED	The HP JetDirect print server detected that the print server object has not been assigned any queues to service. Assign queues to the print server object using the HP JetAdmin or PCONSOLE utilities.
NOT CONFIGURED	When multiple file servers are configured, the error is only displayed on the configuration page (also called a self-test page or configuration plot) if none of the file servers were successfully connected. However, HP JetAdmin can display status for all of the file servers.
NOVRAM ERROR	The HP JetDirect print server has not been configured for NetWare. Use HP JetAdmin to configure the print server for NetWare networks.
OUT OF BUFFERS	The HP JetDirect print server cannot read the contents of its NOVRAM.
OVERFLOW ERROR	The HP JetDirect print server was unable to allocate a buffer from its internal memory. This indicates all buffers are busy due possibly to heavy broadcast traffic or large amounts of network traffic directed to the print server.
	Run the power-on self-test; turn the printer off, then on again. For replacement instructions, see the hardware installation guide for your print server.

13-12 HP JetDirect Messages

Table 13-5. General HP JetDirect Messages	
Message	Description
PACKETS TRANSMITTED: PARALLEL PORT X:	Total number of frames (packets) transmitted without error. CENTRONICS indicates a standard parallel connection that transfers data in one direction only (to the printer). BITRONICS indicates a parallel connection that supports bi-directional communications. ECP indicates a Bi-ironics parallel connection that supports an enhanced capabilities port. DISCONNECTED indicates that no printer is attached to the port or the printer is not turned on.
PASSWORD ERROR	The HP JetDirect print server detected that the password for the NetWare print server object is wrong. Use the PCONSOLE utility to erase the password for the print server object. When the HP JetDirect print server logs on again, it sets a new password. You may also use the HP JetAdmin software to create a new print server object and change the HP JetDirect print server's NetWare node name to match. When multiple file servers are configured, the error is only displayed on the test page if none of the file servers are connected. Use HP JetAdmin to obtain the status of all file servers.
PORT SELECT: BNC 10BASE-T 100VG	The port on the card that was automatically sensed as having the cable attached.
POSTSCRIPT MODE NOT SELECTED or POSTSCRIPT UPDATE NEEDED	The printer does not support the EtherTalk MIO extensions. It may be a printer which does not support AppleTalk, such as an HP LaserJet III(S) with the revision A PostScript ROM, or an HP LaserJet IISI in PCL mode. When this message is displayed, the other AppleTalk messages (ADDRESS, APPLE TALK NAME, ZONE NAME) are not displayed.
PRINTER NUMBER IN USE	The printer number assigned to the printer with HP JetAdmin is already in use by another printer. Re-run HP JetAdmin and assign an unused printer number. This may also occur when a printer is power cycled, in which case the error goes away after the print server times out and detects the lost connection.
PRINTER NUMBER NOT DEFINED	The printer number you assigned to the remote printer using the HP JetAdmin software has not been defined. Re-run the HP JetAdmin software and assign a valid printer number to the HP JetDirect print server, or run PCONSOLE and define this printer number for the print server. For instructions on running HP JetAdmin, see the Novell NetWare networks chapter.

13 HP JetDirect Messages

Table 13-5. General HP JetDirect Messages	
Message	Description
PRINTER TYPE	CENTRONICS indicates a standard parallel connection that transfers data in one direction only (to the printer). BITRONICS indicates a parallel connection that supports bi-directional communications. ECP indicates a Bi-ironics parallel connection that supports an enhanced capabilities port. DISCONNECTED indicates that no printer is attached to the port or the printer is not turned on.
PRINT SERVER NOT DEFINED	The file server does not have a print server object that corresponds to the NetWare node name typed in HP JetAdmin. Use HP JetAdmin or PCONSOLE to create the print server object, or use HP JetAdmin to change the NetWare node name to match an existing print server object. When the HP JetDirect print server is configured for multiple file servers, the error is only displayed on the configuration page (also called a self-test page or configuration plot) if none of the file servers made the connection. HP JetAdmin can display all the servers status in the Diagnostics section.
PSEVER CLOSED CONNECTION	The print server requested a termination of the connection with the HP JetDirect print server. No error exists or is indicated. Make sure the print server is running, and restart it if necessary.
READY	The HP JetDirect print server has successfully connected to the server and is awaiting data.
RECEIVE BUFFER ERROR	Run the power-on self-test: turn the printer off, then on again. If the error persists, replace the HP JetDirect print server. For replacement instructions, see the hardware installation guide for your print server.
REMOVE RECEIVED	The HP JetDirect print server has received a Remove Adapter data frame during the Token Ring insertion process, or has received a remove ring station data frame request, and has removed itself from the ring.
REQUEST PARAM	The HP JetDirect print server determines that a Ring Parameter Server (RPS) is present on the ring, but does not respond to a request initialization data frame.
RETRY ERROR	Verify that the Ethernet network cable is correctly terminated on both ends. Make sure your HP JetDirect print server is correctly attached to your network.
RING BEACONING	The HP JetDirect print server receives a beacon data frame after physically inserting into the ring. This indicates a break in the ring.

Table 13-5. General HP JetDirect Messages	
Message	Description
RING FAILURE	The HP JetDirect print server times out when attempting a ring purge after becoming the active monitor; that is, the HP JetDirect print server is unable to receive its own ring purge data frames.
RING RECOVERY	The HP JetDirect print server has received claim token data frames on the ring. The HP JetDirect print server may be transmitting the claim token frames.
SECURITY EQUIVALENCE NOT SET	The security equivalences for your print server are not set up properly. Reconfigure your print server using HP JetAdmin or NWADMIN.
SIGNAL LOSS	The HP JetDirect print server has detected a loss of signal on the ring. Check the cable from the HP JetDirect print server to the network and check the wiring concentrator. or A signal loss condition has been detected at the HP JetDirect print server receiver input during the open process (either when wrapped or inserted onto the ring).
SINGLE STATION	The HP JetDirect print server has sensed that it is the only station on the ring.
SOE ERROR	Run the power-on self-test: turn the printer off, then on again. If the error persists, replace the HP JetDirect print server.
TFTP IN PROGRESS	The HP JetDirect print server is currently in the process of obtaining its basic IP configuration information through TFTP and has not detected any errors.
TFTP LOCAL ERROR	The TFTP transfer of the configuration file from the host to the HP JetDirect print server failed with the local print server encountering some form of inactivity timeout, or excessive retransmission situation.
TFTP REMOTE ERROR	The TFTP transfer of the configuration file from the host to the HP JetDirect print server failed with the remote host sending a TFTP ERROR packet to the print server.
TFTP RETRIES EXCEEDED	The overall retrying of the TFTP transfer of the configuration file from the host to the HP JetDirect print server has exceeded a retry limit.
TIMEOUT	The HP JetDirect print server fails to logically insert onto the ring before the insertion timer expires. Each phase of the insertion process must complete before expiration of the 18-second insertion timer.
TOKEN ERRORS:	Total number of times a violation of the token-passing protocol has been detected.
TOTAL PACKETS RECEIVED: TOTAL PACKETS RCVD:	Total number of frames (packets) received by the HP JetDirect print server without error. This includes broadcast, multicast packets, and packets specifically addressed to the print server. This number does not include packets specifically addressed to other nodes.
TRANSMIT BEACON	The HP JetDirect print server is transmitting beacon frames to the ring.

HP JetDirect Messages 13-15

Table 13-5. General HP JetDirect Messages	
Message	Description
TRANSMIT ERROR	Check the network topology and verify all cable segments.
TRYING TO CONNECT TO SERVER	The HP JetDirect print server is trying to connect to the print server or NetWare file server after being configured. Wait for the print server to establish a connection with the print or file server.
TURN PRINTER OFF/ON	This message may appear after you upgrade to a new version of firmware. When this message appears, turn the printer off, then back on to enable any new functionality that was recently downloaded.
UNABLE TO ATTACH TO QUEUE	A failure was detected when the HP JetDirect print server tried to attach to one of the queues assigned to the print server object. This may be because no servers are allowed to attach to this queue. There may also be a networking or security problem. Use PCONSOLE to make sure that servers are allowed to attach to the queue, to delete the print server object from the list of queue servers if you want the HP JetDirect print server to service other queues, or to delete the queue and create a new one (the print server object must be added to the list of queue servers). When the HP JetDirect print server is configured for multiple file servers, the error is only displayed on the configuration page (also called a self-test page or configuration plot) if none of the file servers made the connection. HP JetAdmin can display all the servers' status in the Diagnostics section.
UNABLE TO CONNECT TO SERVER	Remote Printer mode: The HP JetDirect print server was unable to establish an SPX connection with the print server. Make sure that the print server is running and that all cables and routers are functioning correctly. Queue Server mode: The HP JetDirect print server could not establish an NCP connection to the file server. Make sure that the correct file servers are connected. Use HP JetAdmin to obtain the status of all file servers. When multiple file servers are configured, the error is only displayed on the configuration page if none of the file servers were successfully connected. However, HP JetAdmin can display status for all of the file servers.
UNABLE TO FIND SERVER	The HP JetDirect print server was unable to find the NetWare print server (Remote Printer mode) or file server (Queue Server mode) (there was no response to service queries for advertising print servers or file servers that matched the configured print server or file server name). Make sure that the print server or file server is running and that the print server or file server name configured on the HP JetDirect print server matches the actual name used by the print server or file server. Also make sure that all cables and routers are functioning correctly.

13-16 HP JetDirect Messages

13 HP JetDirect Messages

13 HP JetDirect Messages

Table 13-5. General HP JetDirect Messages	
Message	Description
UNABLE TO GET NDS SRVR ADDR	The NDS server address cannot be located or accessed.
UNABLE TO LOGIN	<p>A failure was detected when the HP JetDirect print server tried to log onto the file server. This could be caused by the print server object not existing on the file server, or because of a security check that prevents the print server from logging in.</p> <p>Make sure the file server name and print server object name are correct. Use PCONSOLE to erase the password for the print server object. Use HP JetAdmin to create a new print server object.</p> <p>When the HP JetDirect print server is configured for multiple file servers, the error is only displayed on the configuration page (also called a self-test page or configuration plot) if none of the file servers made the connection. HP JetAdmin can display all the servers' status in the Diagnostics section.</p>
UNABLE TO SENSE NET NUMBER	The HP JetDirect print server has been trying for over 3 minutes to determine the NetWare protocol used on the network. Make sure that any file servers and routers are operating correctly. Make sure that the settings for NetWare frame type and source routing are correct.
UNABLE TO SET PASSWORD	<p>A failure was detected when the HP JetDirect print server tried to set the password for the print server object. (Whenever the HP JetDirect print server is able to log in without a password, it sets the password automatically.) This indicates a networking or security problem. Try using HP JetAdmin to create a new print server object.</p> <p>When multiple file servers are configured, the error is only displayed on the configuration page if none of the file servers were successfully connected. However, HP JetAdmin can display status for all of the file servers.</p>
UNDERFLOW ERROR	Check the cabling and BNC "T" connectors. If the error persists, run the power-on self-test; turn the printer off, then on again. If the error persists, replace the HP JetDirect print server. For replacement instructions, see the hardware installation guide for your print server.
UNEXPECTED PSERVER DATA RCVD	The print server sent some data when the HP JetDirect print server had not given its permission to do so. This indicates a possible print server problem, possibly a software problem.
UNICAST PACKETS RCVD:	Number of frames specifically addressed to this HP JetDirect print server. This does not include broadcasts or multicasts.

Table 13-5. General HP JetDirect Messages	
Message	Description
UNKNOWN NCP RETURN CODE	The HP JetDirect print server encountered an unexpected fatal error after it had successfully connected to the file server. A wide variety of failures could produce this error message, including a downed file server or a network router failure. The raw NCP error code is available in the Diagnostics section of HP JetAdmin, and may provide more information.
UNSENDABLE PACKETS:	Total number of frames (packets) not successfully transmitted because of errors.
XMIT COLLISIONS:	Number of frames not transmitted because of repeated collisions.
XMIT LATE COLLISIONS:	Total number of frames not transmitted because a late collision occurred. A large number may indicate a cabling problem on the network.

Warranty Information

Your Authorized Dealer

If you encounter difficulty, begin by contacting the person who sold you the HP JetDirect print server. Your Hewlett-Packard Authorized Dealer is familiar with your needs, equipment, and software and should be able to provide you with the information you want.

User Warranty

The Hewlett-Packard JetDirect print server is warranted against defects in materials and workmanship for a period of one year from the date of receipt by the end user. During the warranty period, Hewlett-Packard will replace the unit at no charge provided the defective unit is returned. Take the unit to your HP Authorized Dealer or your local HP sales office representative. Be sure to enclose a copy of your purchase receipt.

This warranty does not apply if the HP JetDirect print server has been damaged by accident or misuse, or as a result of service or modification by other than an authorized Hewlett-Packard Service Facility. No other express warranty is given by Hewlett-Packard. Hewlett-Packard shall not be liable for consequential damages.

For warranty service on HP JetDirect products, do the following:

Call HP at (800) 366-8040, Monday through Friday, 6 a.m. to 5 p.m. Pacific Time (USA only).

When calling, please have the following information ready for the HP customer service representative:

- HP JetDirect product you are calling about
- Model number of product
- Serial number of product
- Complete description of product failure

- Credit card with expiration date (Visa, MasterCard, American Express, Discover) for collateral. HP will not bill for the part ordered as long as the defective product is returned within 30 days. (Customers who have an established account with HP may issue a purchase order as collateral.)
- Your Shipping and billing address

The customer service representative will record the above information and ship out a new or repaired replacement product. You should receive the product within 3 to 4 working days depending on stock availability.

When you place your order, you will receive instructions on how to return the defective product. To avoid being billed for the non-return of the defective product, return it to HP as soon as possible. Do not return the defective product to HP until you have called HP to initiate the warranty replacement order.

Service Billing (Out of Warranty)

When ordering a replacement unit that is out of warranty, you may be charged a repair cost. For more information, see your Hewlett-Packard Authorized Dealer or your local HP sales office representative. Or, you can call Hewlett-Packard at 1-800-366-8040 (USA only).

Service Outside of the United States

Customers outside the United States should contact their Hewlett-Packard Authorized Dealer or Hewlett-Packard Sales Office to obtain information on prices, exchange unit availability, and instructions.

Servicio en Mexico

Para cualquier servicio requerido dentro de la República Mexicana, favor de comunicarse a:

Hewlett-Packard de Mexico, S.A. de C.V.
Monte Morelos No. 209
Loma Bonita
Guadalaajara, Jal. CP 45060
Telephone 669-95-00

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A Warranty Information

HP Support for NDPS

Introduction

NetWare Distributed Print Services (NDPS) is a distributed, client-server, application-layer print service for NetWare environments. It consists of client, server, and connectivity components seamlessly linking and sharing network printers with applications. NDPS provides comprehensive management and control of your entire printing setup through a single graphical administrative utility and a single interface for all clients. All HP printers are supported in NDPS.

Made possible through the partnership of Novell and Hewlett-Packard, NDPS changes the way users print, administrators manage, and it influences the printer options available to both through offerings from independent software vendors.

NDPS Features

- Support for bidirectional communications
- Configurable event notification, including e-mail, pop-up windows, and event logs
- Printer status and increased print job control
- Automatic printer driver download
- Easily locate desired printers based on their capabilities
- Scalable for small to large businesses

Network Administrator Features

NDPS simplifies and streamlines the administration of network printing by eliminating the need to set up and link print queues, printer objects, and print servers. NDPS is managed through NetWare Administrator to maintain a consistent NetWare management look and feel. It also enables a single graphical administration utility to provide comprehensive management and control for multiple printers.

End User Features

NDPS allows NetWare network users greater control over their printing through capabilities such as:

- Bidirectional feedback, which keeps users informed of print status
- Print job management, which lets users move, copy, or delete jobs among printers
- Automatic driver downloading, which lets users print without worrying whether they have the proper print driver installed
- Users can choose the best printer for their needs based on visibility to the printers' capabilities

System Requirements

NDPS works in concert with the latest release of NetWare 4.x distributed naming, security, and object management services to integrate document presentation, production, distribution, and delivery services.

NDPS will be included as the default print service for future releases of the NetWare operating system.

Supported Clients

See Novell's NDPS documentation for more information.

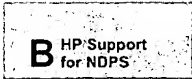
Installing NDPS

See Novell's NDPS documentation for more information.

Support for HP Printers

Installing and configuring a network printer is simple. Full authentication offers greater network security by registering the printer as an NDS object, which then enables the printer to take advantage of security and other NetWare benefits without sacrificing the ease of printing.

HP printers that do not have a bidirectional communication capability will be able to run in NDPS environments. Special printer configuration files for virtually all HP printers are included with the NDPS product. These files respond to all NDPS queries sent to the printer. HP printers with bidirectional feedback capabilities, such as the HP LaserJet 5 or 5Si series, appear as intelligent NDPS printers through a gateway that translates queries and notifications.



Supported Configurations

The NDPS architecture is tightly coupled with the performance-enhancing features of NDS, resulting in higher efficiency, significantly lower memory usage, and easier management of the entire network from a single location. All NDPS-configured HP printers appear as NDS objects, allowing users to browse for new printers based on the printers' properties, such as location, type, color, paper size, and memory. A printer is a component of NDPS that acts as an intelligent, simplified print server, spooler, and print queue combined into a logical print management agent that maintains information about specific physical printers and accepts operations from print clients. Because these printers can appear as NDS objects, they can take advantage of NetWare services such as management and security.

NOTE

Use HP JetAdmin in the Peer-to-Peer mode (Direct mode) to set printer defaults such as high capacity output, disk setup, and flash memory.

Connecting HP Printers in NDPS

HP LaserJet printers can be connected to the NDPS environment via a parallel connection or an HP JetDirect connection using the HP Gateway NLM.

Bidirectional feedback and control between clients and the HP printer are facilitated through an HP gateway. The gateway provides interoperability for printers that currently support bidirectional communications using SNMP defined in the IETF standard Printer Management Information Base (MIB).

See Novell's NDPS documentation for additional setup information.

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